UW Extension Plant Pathology

Fusarium wilt. Howard F. Schwartz, Colorado State University

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Wyoming Dry Bean Commission Research Grant Funding for 2018-2019

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- Dry bean soil-borne disease management with an integrated approach of tillage, variety, and in-furrow fungicides
  - Objective: to determine if an integrated approach of a single in-furrow fungicide application at planting, varietal selection, combined with deep tillage to alleviate soil compaction is sufficient to protect the dry bean crop until harvest from soil-borne disease impacts.
- 2018 trials were conducted at SAREC and PREC

Dry-bean soil-borne disease management with in-furrow fungicides, 2018

- 4 reps RCBD with variety and fungicide treatment in a factorial arrangement with tillage handled as a split plot, SAREC (Lingle, WY) and PREC (Powell, WY)
- Treatments:
  - Tillage- conventional, deep tillage
  - Fungicide (in-furrow)- UT CK, Headline, Proline
  - Variety- Longs Peak, Montrose, ND Palomino, Othello, Sundance

- Planted SAREC 28 June, 2018; PREC 8 June, 2018 : in-furrow fungicide applied to soil at planting.
- Measured stands, plant vigor, root disease and yields

Results for SAREC

Main Treatments	Stand Count (# per 80 ft)	Compaction (in. penetrated)	Disease severity (0-4)	Vigor (0-100%)[3]	Bean seed yield (g/200ft^2)
	23 Jul	28 Jun	17 Aug	17 Aug	
Tillage					
Conv. Tillage	219.8 a	11.1 b	2.5 a	102.6 a	777.2 a
Deep Tillage	214.2 a	20.1 a	2.5 a	102.1 a	810.8 a
Fungicide					
Untreated	218.4 a	---	2.6 a	100.0 b	793.1 a
Headline	222.2 a	---	2.4 b	103.9 a	819.6 a
Proline	210.4 b	---	2.4 b	103.1 a	769.3 a
Cultivar					
Long's Peak	193.3 c	---	2.4 b	---	651.6 c
Montrose	215.3 b	---	2.6 b	---	730.7 bc
ND Palomino	215.9 b	---	2.5 a	---	799.5 b
Othello	252.0 a	---	2.6 a	---	1021.8 a
Sundance	208.5 b	---	2.3 c	---	766.4 b

Results for PREC

Main Treatments	Stand Count (# per 80 ft)	Compaction (in. penetrated)	Disease severity (0-4)	Vigor (0-100%)[3]	Bean seed yield (g/200ft^2)
	5 Jul	8 Jun	2 Aug	12 Sep	
Tillage					
Conv. Tillage	194.1 a[5]	11.8 b	2.8 a	102.9 a	1334.8 a
Deep Tillage	181.6 a	16.6 a	2.9 a	101.1 b	1220.2 a
Fungicide					
Untreated	189.6 a	---	2.9 a	100.0 b	1305.1 a
Headline	192.7 a	---	2.8 a	104.0 a	1288.8 a
Proline	181.3 a	---	2.8 a	102.0 ab	1238.7 a
Cultivar					
Long's Peak	158.9 c	---	2.7 c	---	1074.2 c
Montrose	178.7 b	---	3.0 b	---	1303.1 b
ND Palomino	215.6 a	---	2.9 b	---	1324.7 b
Othello	212.9 a	---	3.2 a	---	1463.0 a
Sundance	173.3 bc	---	2.5 d	---	1222.6 b

Results

- Tillage had little effect in 2018
  - Only SAREC had significant penetrometer readings
- Proline had slight negative impact on stands
- In-furrow fungicides reduced disease severity (8%) at SAREC. No effect at PREC.
- Variety had significant effects on parameters measured

Proposal for 2018

- we propose continuing our project evaluating locally adapted cultivar response to soil-borne diseases in conjunction with tillage and in-furrow fungicide

- Conducted at SAREC and PREC
- May change some of the fungicide based on other fungicide trials
- Will include an additional earlier disease rating

Thanks for your support!