Dry Bean

Bacterial Wilt

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Identification and Life Cycle

Bacterial wilt is caused by the bacterium *Curtobacterium flaccumfaciens* subsp. *flaccumfaciens*. This pathogen grows throughout the water conducting tissues of the plant and impedes water movement, resulting in a wilt. Symptom development is favored by temperatures greater than 90°F. Infection is often caused by the planting of infected seed, but the pathogen may also survive in infested crop debris. Wilt bacteria are more confined to internal infection of plant vascular tissue, and apparently are not spread as readily by rain or movement of machinery through wet plants as compared to the halo or common bacterial blight pathogens of bean. Infection through natural openings on the plant are rare, but hailstorms and wounding favor infection. The bacterial wilt pathogen is disseminated among fields by irrigation water and movement of infested crop debris or contaminated seed.

Plant Response and Damage

Bacterial wilt infection of young seedlings causes stunting, wilting, and eventual death of the plant. Larger plants that become infected may survive the entire season and produce seed. Leaves of older infected plants will wilt, especially during moisture stress and the warmer parts of the day. Golden brown, irregularly shaped leaf lesions occur, and affected leaves may drop off. Infection can occur on pod sutures similar to that caused by common and halo blights, but it seldom causes circular water-soaked spots. The bacteria may cause a bright yellow, orange, or purple color under the seed coat, depending on the strain of wilt organism present and the market class of bean that is infected. The disease occurs infrequently in the High Plains, but can be damaging when it occurs.

Management Approaches

Biological Control

No biological control strategies have been commercialized for bacterial wilt.

Cultural Control

Plant only high quality, certified seed free from the bacterial wilt pathogen. Varieties differ in their susceptibility to bacterial wilt, and resistant or tolerant varieties should be planted if available. Practice a two year rotation to non-hosts such as small grains. Avoid reuse of irrigation water, if possible. Practice strict sanitation of crop debris and volunteer beans to reduce pathogen survival between bean crops.

Chemical Control

Antibiotic seed treatment can reduce surface contamination of seed, but chemical controls are most effective when integrated with sound cultural practices.

Product List for Bacterial Wilt:

Pesticide	Rate per Acre	Application Frequency	Remarks
Streptomycin: not all formulations listed			
Agri-Strep 500	13 oz (6.6)	-	Slurry seed treatment (50,000 ppm)

Categories: Dry Bean, Disease, Bacterial Wilt

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