Canola and Mustard

**Fusarium Wilt**

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**Identification and Life Cycle**

Fusarium wilt is caused by the fungus *Fusarium oxysporum* f. sp. *conglutinans*. Disease severity is favored by high temperature stress and soil compaction. In general, any factor which contributes to a reduced rate of root growth increases the plant's susceptibility to Fusarium wilt. Early planting in cool, moist soil favors the disease. High plant populations also increase plant stress and favor infection. Improper cultivation, other soil-borne pathogens, and various herbicides are also known to induce injury of young roots and aggravate Fusarium wilt damage. The effect of Fusarium wilt is most apparent during blossoming and early pod set when the plant and its productivity are more sensitive to stress. The pathogen is disseminated within and among fields by the movement of contaminated soil by wind, irrigation water, and on equipment. The pathogen survives between canola or mustard crops as dormant chlamydospores or in infested crop debris.

**Plant Response and Damage**

Aboveground symptoms of Fusarium wilt appear on lower leaves which exhibit yellowing and wilting, which become more pronounced and progress upward into younger leaves. Stunting is evident, especially if plant infection and stress occurred during the seedling and vegetative stages. The margin of infected leaves turns tan to brown and diseased plants become progressively more yellow. Severely infected plants exhibit permanent wilting and premature defoliation. Vascular discoloration on the main stem is the diagnostic symptom and is usually evident after the initial appearance of foliar symptoms. The reddish brown vascular discoloration of root, stem, and petiole tissue of infected plants will vary considerably in intensity, depending on variety reaction, severity of infection and environmental conditions.

**Management Approaches**

**Biological Control**

Incorporation of organic matter may reduce Fusarium wilt by improving soil tilth and water holding capacity.
Cultural Control

Plant high quality seed in warm, well-prepared seedbeds under conditions favorable to rapid seedling emergence. Resistant varieties are available and should be planted. Avoid planting in fields with a history of root rot or wilt problems. A five-year or longer rotation to non-hosts such as small grains or corn reduces wilt severity. Chiseling (subsoiling) 10 to 20 inches deep between bean rows promotes root penetration and improves plant tolerance to wilt, but avoid root injury during field operations. Manage irrigation to eliminate moisture stress to the developing plant, but avoid excess water that may deprive roots of oxygen. Avoid dense plantings. Space plants at least two to three inches apart within the row to reduce plant competition for water.

Chemical Control

Fumigants provide effective control of Fusarium wilt, but are not cost effective for canola and mustard.

Categories: Canola and Mustard, Disease, Fusarium Wilt

Date: 12/31/2004