

Dry Bean

Bean Common Mosaic

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Identification and Life Cycle

Bean common mosaic virus (BCMV) causes Bean common mosaic of dry bean, and can be a problem when aphids are present and susceptible varieties are grown near infected plants in the field or nearby field. BCMV is not a production problem east of the Rockies, unless seed stocks were contaminated and high populations of aphids exist. The virus can infect few plants beside dry bean. The virus can be transmitted mechanically by plant-to-plant abrasion and equipment. The virus is disseminated among fields by viruliferous aphids, pollen, movement of contaminated seed, and by movement of contaminated equipment between fields.

Plant Response and Damage

BCMV causes a systemic mosaic or darkening (necrosis) in susceptible plants infected by the virus. Symptoms appear as a green to bluish-green mottled or mosaic pattern on leaves which usually exhibit a downward curling or cupping. This mosaic symptom is often associated with and follows the network of leaf veins, which become slightly darker than the areas between the veins. These symptoms are more easily observed by shading the leaf from direct sunlight. Severe, early infection greatly reduces plant vigor and productivity, and increases seed transmission.

The black root reaction is a systemic necrosis symptom that occurs in varieties with a specific gene for resistance to BCMV. Varieties with this gene are resistant to all strains of BCMV under most conditions. However, when plants growing at high temperature are infected with BCMV, the hypersensitive black root reaction develops. The systemic necrosis begins with a slight wilting of young leaflets at any stage of plant growth, followed by a browning or blackening of the vascular tissue, and eventually plant death. Discoloration of the water conducting tissue is observed by making a cross sectional cut through stems and pods. Yield losses from BCMV are more severe when infection occurs early in the growing season, and may approach 80%.

Management Approaches

Biological Control

No biological control strategies have been developed for Bean common mosaic.

Cultural Control

Plant certified seed of varieties resistant to BCMV. The BCMV resistant *I* gene can be overcome by necrotic strains of BCMV. Varieties with this resistance gene should be avoided if possible in the High Plains regions. Adjust equipment to minimize mechanical injury and rubbing of plants.

Chemical Control

Chemical control of the BCMV aphid vector is seldom effective or economical.

Categories: Dry Bean, Disease, Bean Common Mosaic

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