2005

EC05-1893 Dry Bean Disease Profiles I: Foliar and Bacterial Diseases

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University of Nebraska Lincoln

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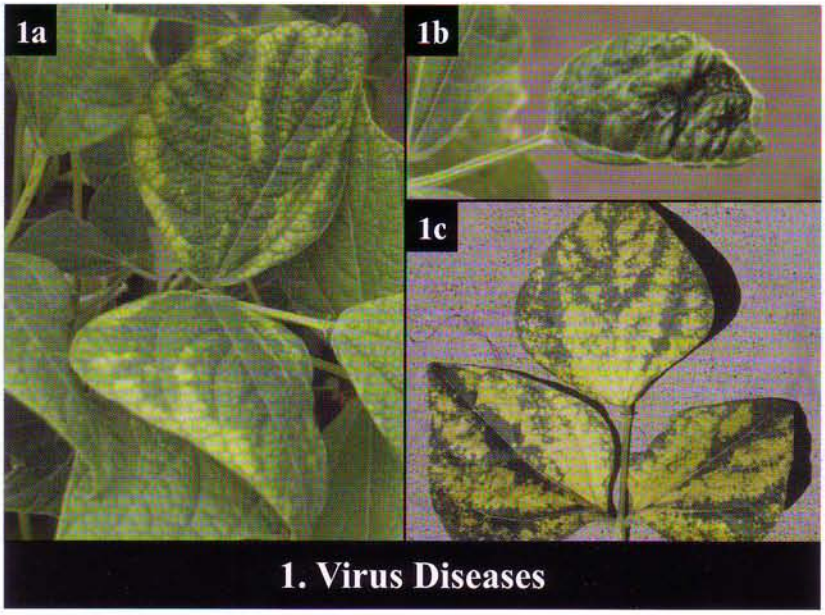
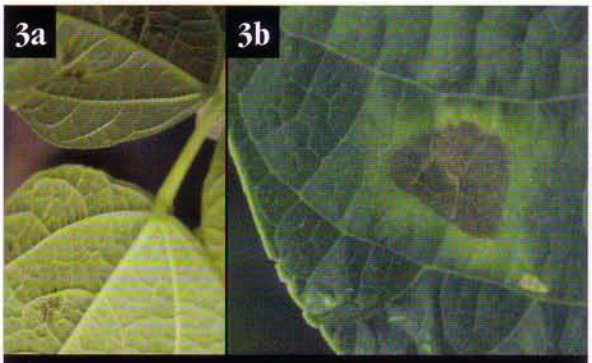


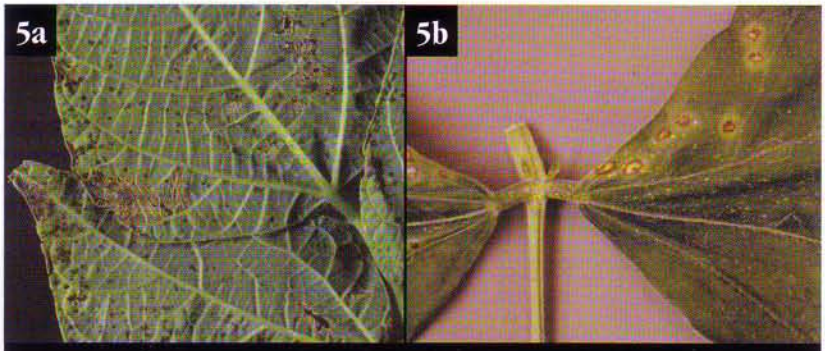
1. Virus Diseases

2. Rust

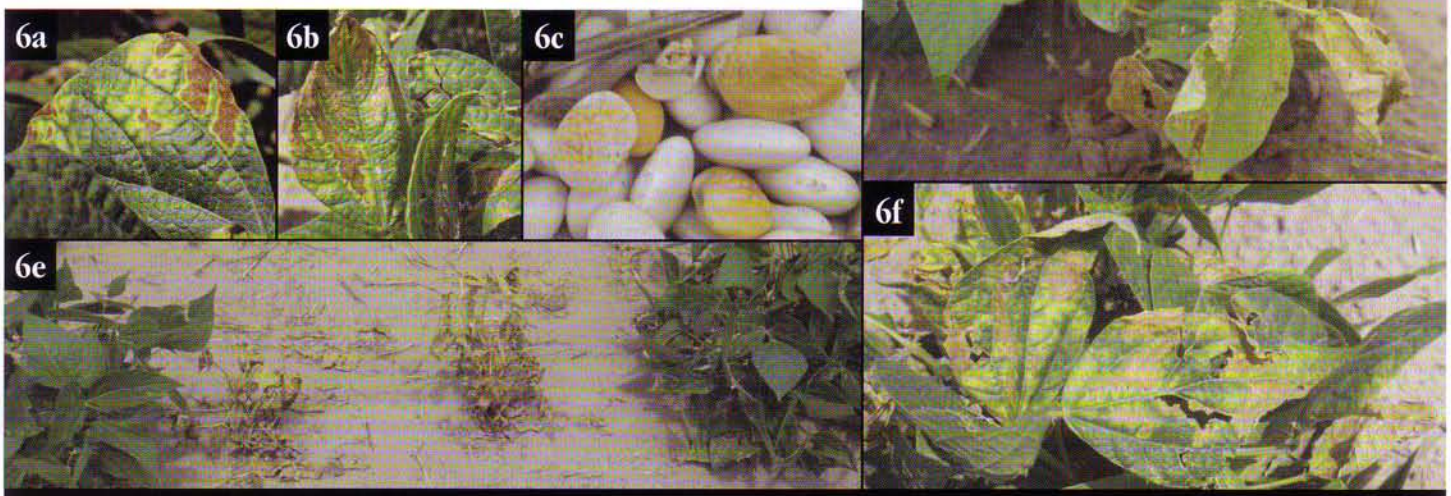


3. Common Blight

4. Halo Blight



5. Brown Spot



6. Bacterial Wilt

Diseases	Symptoms
Bean Common Mosaic/ Bean Yellow Mosaic Virus *(BCMV) and/or Bean yellow mosaic virus (BYMV)*	Both viruses are transmitted by several species of aphids, and numerous viral strains are known (more than 10 for BCMV and more than 20 for BYMV), but BCMV is spread between production areas from infected seed. Bean common mosaic virus can consist of light and dark mosaics (*Figure 1a*), leaf malformation (*Figure 1b*), rolling or rugosity, appearance of yellow spots (*Figure 1c*), stunting, necrosis, or premature death. Type and severity of symptoms depend on host cultivar, virus strain and environment.
Rust *Uromyces appendiculatus*	Initial symptoms appear as small, whitish, slightly raised spots on leaves or pods that rupture to form dark, reddish brown pustules (*Figure 2*) containing spores that rub off onto fingers or clothing. Larger pustules often are surrounded by yellow halos.
Common blight *Xanthomonas campestris pv. phaseoli*	Leaf symptoms appear initially as water-soaked spots (*Figure 3a*) that gradually enlarge, then become necrotic. A narrow yellow border surrounds necrotic lesions (*Figure 3b*). Lesions are found at both leaf margins and interveinally. Pod symptoms consist of generally circular, slightly sunken, dark brown lesions. Bacterial ooze on pods or seeds is a butter yellow color.
Halo blight *Pseudomonas syringae pv. phaseolicola*	Leaf symptoms appear several days after infection as small, water-soaked spots on lower surface like common blight (*Figure 3a*). These spots become reddish brown lesions surrounded by a thick, yellow-green border (halo) on upper leaf surface (*Figure 4*). Pod symptoms consist of red or brown lesions that also may appear water soaked. Bacterial ooze forms on pods under high humidity conditions and is distinguished from that of common blight by appearing as a silvery, white to cream color.
Brown spot *Pseudomonas syringae pv. syringae*	Leaf symptoms consist of brown and necrotic lesions of varying sizes (*Figure 5a*), often surrounded with a yellow zone (*Figure 5b*). Lesions also may fall out, giving leaves a shot-hole appearance. Water-soaking of affected tissues is usually absent or minimal, and stem lesions may be present following systemic infections. Pod lesions are circular and water-soaked, and later become brown and necrotic.
Bacterial wilt *Curtobacterium flaccumfaciens pv. flaccumfaciens*	Symptoms observed recently in Nebraska fields consist of interveinal, necrotic lesions surrounded by yellow borders (*Figures 6a and b*). These lesions tend to be more irregular than those of common blight, and water-soaking of leaves is not generally observed. Seeds from surviving plants are often discolored (*Figure 6c*). Infected plants also exhibit symptoms of wilting (*Figure 6d*) during periods of moisture stress due to the pathogen blocking movement of water within vascular tissues. The pathogen is seedborne, and damage is more severe if plants become infected early as seedlings (*Figure 6e*), or are subjected to other stresses such as hailstorms (*Figure 6f*).

Photo Credits: Figure 2 is courtesy of H. F. Schwartz, Extension Specialist in Plant Pathology at Colorado State University. All other photos are courtesy of faculty in the University of Nebraska Institute of Agriculture and Natural Resources.