

Dry Beans XIII-33

Field Key to Insect, Mite Pests, & Diseases of Beans

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Damage to Seeds, Seedlings and Roots

Discoloration on roots and hypocotyls:

Water-soaked areas on roots, hypocotyls and stems. Advanced infections show shrunken brown stem tissue, wilting and plant death.

-----**Pythium damping off**

Linear or circular reddish-brown shrunken lesions or cankers. Advanced infections show a brick-red discoloration in the central part of the lower stem. Seedlings and young plants may die or break off at infected part of stem. Often occurs in circular patterns in the field.

-----**Rhizoctonia root rot**

Stunted, yellowed plants scattered through field. Reddish brown streaks on roots and hypocotyl up to soil surface.

-----**Fusarium root rot**

Stunted, yellowed plants with tan to brown leaf margins. Infected plants also exhibit reddish-brown vascular discoloration.

-----**Fusarium wilt or yellows**

Seeds, seedlings, or roots chewed or tunneled:

Young plants chewed through at the base. Dull colored worms or caterpillars can be found under debris and in the soil around plants.

-----**Cutworms (several species)**

Seeds or young seedlings tunneled by small, legless, white worms. May be associated with reduced stands and wilted or dead seedlings. Damage to growing point may cause typical "snakehead" damage symptom. Mechanical damage may cause similar problems.

-----**Seedcorn maggot**

Seeds tunneled and roots damaged by yellowish, thin, hardbodied larvae up to 0.75" in length. May be associated with reduced stands and wilted or dead seedlings. More common in drier parts of irrigated fields.

-----**Wireworms**

Roots damaged by large white larvae with a typically "C"-shaped body. May be associated with reduced stands, wilted plants.

-----**White grubs**

Leaves cupped or distorted:

Seedlings with cupped and distorted leaves. Undersides of leaves with tiny, yellowish, cigarette-shaped insects. Problem most common in furrow irrigated fields and near maturing winter wheat.

-----**Onion thrips**

Damage to Foliage and Stems — Larger Plants

Leaves with distinct lesions:

Small ($\frac{1}{16}$ inch in diameter), greasy, water-soaked spots on leaflets later become larger water-soaked spots surrounded by a $\frac{1}{16}$ - $\frac{1}{2}$ inch greenish-yellow halo. Severe infections can lead to yellowing and death of new foliage.

-----**Halo blight**

Similar to halo blight, except mature lesions turn brown. Lesion center may fall out, causing a shothole appearance.

-----**Bacterial brown spot**

Small, irregularly shaped lesions which later enlarge to large dark brown lesions along the edge of the leaflet. Lesions often surrounded by a narrow, lemon-yellow margin.

-----**Common bacterial blight**

Wet, soft lesions on leaves, branches, stems and pods. These later become watery, rotten masses of tissue covered with white (not blue or grey) moldy growth. Infected parts wilt and die, and then take on a characteristic bleached appearance.

-----**White mold**

Small yellow or white spots on leaves which later enlarge to reddish-brown or rust-covered pustules, often bordered in yellow, about $\frac{1}{8}$ inch in diameter. Spores released from pustules give the leaf a rusty appearance. Severely infested leaves may curl upwards, turn brown, and drop prematurely.

-----**Rust**

Leaves with generalized discoloration:

Upper leaf surfaces show a reddish-brown flecking. Affected leaves can eventually turn yellow and drop. Similar in appearance to rust, but discoloration cannot be rubbed off and occurs only on upper leaf surfaces.

-----**Ozone bronzing**

Similar to above, except leaves are thickened and bronzing not limited to upper surfaces. Areas between leaf veins can turn brown and fall out. Plants can also be stunted and exhibit delayed maturity. Severely affected plants can have white leaves and eventually die. Symptoms may occur in spots or throughout field.

-----**Zinc deficiency**

Leaves have a silvery or bronzed appearance. Microscopic animals found on the undersides of leaves. Often associated with drought stress.

-----**Spider mites**

Leaves distorted and/or with discolored veins:

Plants with curled or cupped leaves. Leaves show a green to bluish green mottling or mosaic pattern. Leaf veins can be slightly darker than areas between veins.

-----**Bean common mosaic virus**

Similar to above, but no leaf cupping and mottling also involves yellow and white leaf tissue. Occurs in a very low percentage of plants in commercial varieties.

-----**Leaf variegation (genetic)**

Similar to above, with younger leaves showing green veins and yellow tissue between veins. Leaf may eventually become white. More common in older plants and after irrigation.

-----**Iron deficiency**

Young leaves on plants brittle, glossy and curled downward. Early symptoms are small yellow spots often surrounded by a yellow halo. Shortened internodes, excess branching, stunting and delayed maturity can also be observed.

-----**Bean Yellow Mosaic Virus**

Plants with downward curled or cupped leaves which are often greatly distorted or puckered. Leaves often become yellow and plants become stunted. In contrast to Bean Yellow Mosaic Virus, older leaves rather than younger are most likely to be curled and cupped.

-----**Curly top virus**

Plants with cupped and distorted leaves. Undersides of leaves with tiny, yellowish, cigarette-shaped insects. Problem most common in furrow irrigated fields and near maturing winter wheat.

-----**Onion thrips**

Leaves skeletonized or showing ragged feeding

Yellow grublike insects with branched spines which skeletonize leaves. Common on young plants and again during pod fill. May be associated with yellowish eggs and spineless immobile pupae.

-----**Mexican bean beetle larvae**

Bronze beetles with black spots on wings, similar in appearance to lady beetles, found skeletonizing bean leaves. May be associated with groups of yellowish eggs found on undersides of leaves.

-----**Mexican bean beetle**

Leaves with large, ragged feeding damage. Damage more common in edges of field. May be associated with large, active, jumping insects.

-----**Grasshoppers**

Discolored petiole nodes or wilted plants:

Nodes between leaf petioles and stems with reddish discoloration, often with reddish streaking of leaf veins and veinlets. Plants can be stunted or killed.

-----**Tobacco streak virus**

Groups of round or pear-shaped insects feeding on the undersides of leaves or on tender stems. Variable in color. Often associated with virus diseases. Heavy infestations

may give plants a wilted appearance.

-----**Aphids (several species)**

Damage to Blossoms and Pods

Leaves or pods with distinct spots or lesions:

Wet, soft lesions on leaves, branches, stems and pods. These later become watery, rotten masses of tissue covered with white (not blue or grey) moldy growth. Infected parts wilt and die, and then take on a characteristic bleached appearance.

-----**White mold**

Small ($\frac{1}{16}$ inch in diameter), greasy, water-soaked spots on leaflets later become larger water-soaked spots surrounded by a $\frac{1}{16}$ - $\frac{1}{2}$ inch greenish-yellow halo. Severe infections can lead to yellowing and death of new foliage. Pod lesions are small water soaked spots or streaks commonly associated with a light cream or silver-colored ooze.

-----**Halo blight**

Similar to halo blight, except mature lesions turn brown. Lesion center may fall out, causing a shothole appearance. Infected pods may be twisted and kinked with circular brownish water-soaked spots.

-----**Bacterial brown spot**

Small, irregularly shaped lesions which later enlarge to large dark brown lesions along the edge of the leaflet. Lesions often surrounded by a narrow, lemon-yellow margin. Infected pods have circular water-soaked areas often associated with yellow masses of ooze.

-----**Common bacterial blight**

Pods with reddish-brown concentric rings. Infected pods can be shriveled and puffy and not produce seeds. Nodes between leaf petioles and stems with reddish discoloration, often with reddish streaking of leaf veins and veinlets. Plants can be stunted or killed.

-----**Tobacco streak virus**

Blossoms contain tiny, active insects:

Blossoms contain tiny, brown, cigarette-shaped, rapid moving insects. Large numbers of insects may be associated with flower and pod abortion.

-----**Flower thrips**

Holes chewed in pods and developing seeds:

Holes chewed in pods and developing seeds. Brown caterpillars with a distinct brown band across the body just behind the head may be found hiding in soil and under debris around the plant on sunny days. At night and on cloudy days caterpillars may be found feeding on plant.

-----**Western bean cutworm**

Categories: Bean field key, Bean Diseases, Bean Pests, Pythium Damping Off, Rhizoctonia Root Rot, Fusarium Root Rot, Fusarium Wilt, Fusarium Yellow, Cutworms, Seedcorn Maggot, Wireworms, White Grubs, Onion Thrips, White Mold, Rust, Halo Blight, Bacterial Brown Spot, Common Bacterial Blight, Ozone Bronzing, Zinc Deficiency, Spider Mites, Mosaic Virus, Onion Thrips, Grasshoppers, Mexican Bean Beetle, Tobacco Streak, Aphids, Cutworm

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