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CORN DISEASES

An Aid to Identification and Control

D. S. Wysong and J. L. Weihing
Agricultural Extension Plant Pathologists

1. **BROWN SPOT:** *Physoderma maydis.* Commonly found in the southern portion of the corn belt, this disease has occasionally been seen in Kansas, Nebraska, and South Dakota. Oblong to round spots, appearing water-soaked at first and later turning to reddish brown blotches, occur on the leaves, leaf sheaths, and stalks. When the disease is severe, leaves may die prematurely and stalks become weak and break below the ear. Abundant moisture and high temperatures are essential to disease development and spread.

2. **HELMINTHOSPORIUM LEAF SPOT:** Three *Helminthosporium* diseases occur rather generally on corn leaves in Nebraska. Northern Leaf Blight *(H. turcicum)* is recognized by long, elliptical, grayish-green to tan spots that may attain 6 or 8 inches in length. Lesions appear first on lower leaves occurring on upper leaves later in the season when moderate temperatures and high moisture conditions prevail. Southern Leaf Blight lesions *(H. maydis)* range from minute specks to spots about 1 1/2 inches long. They are bounded by the leaf veins (hence are parallel-sided) and grayish tan in color. Common Leaf Spot *(H. carbonum)* is rather difficult to differentiate from Southern Leaf Blight on symptoms alone. The spots are similar in size and appearance but are not necessarily parallel-sided. Control measures consist largely of covering previous crop residue, crop rotation, and use of resistant varieties.

3. **VIRUS DISEASES:** Field and sweet corn are subject to several different virus diseases which result in mottling, yellowing, streaking, striping, or flecking of leaves. In severe disease situations, stunting of plants can occur, with excessive tillering and multiple ear shoots. Severely infected plants may be partly or totally barren. Several species of aphids and leafhoppers are known to spread specific viruses from plant to plant and from field to field. Resistant or tolerant corn hybrids appear to offer a reasonable measure of control.

4. **CORN SMUT:** *Ustilago maydis.* Occurring wherever corn is grown, common smut is generally more prevalent in the western corn belt states than in the more humid eastern areas. Yield losses are determined by the number, size, and location of the galls on the plant. Large galls on or above the ear are more destructive than galls below the ear. Smut galls, when mature, contain thousands of powdery, sooty black spores enclosed by a silvery-white membrane. Galls may appear as pea-shaped bumps on the leaves or well developed boils on stalks, ears, and tassels.

5. **EAR ROTS:** Ear and cob rots are always present to some extent throughout the corn producing areas. At least nine different fungi are capable of causing diseases in corn ears, some of these also causing serious stalk and root rots. Depending on the organism(s) present, the symptoms will range from a slight pinkish or whitish discoloration on individual kernels to a complete collapse and shredding of the cob and ear shank. A white, gray, pink, or green-blue mold may be present among the kernels or growing over the entire ear, cementing the husks tightly together. Infections usually follow some form of injury such as hail, ear-feeding insects, or birds. Disease development is favored by wet weather from silking to harvest.

6. **NEMATODE DAMAGE:** Knowledge of specific nematodes—induced diseases in field corn is incomplete, although at least four species are reported as causing damage in eastern and southeastern United States. Generally free-living in moist soil, water, and decaying matter, nematodes attack the roots, pierce the cells and suck up plant juices. Affected plants may be reduced in vigor, off-color, and stunted. Nematodes also provide wounds through which other plant pathogens may enter the host tissue.

7. **CHARCOAL STALK ROT:** *Macrophomina phaseoli.* Both corn and sorghum are attacked by the Charcoal Stalk Rot fungus. The disease occurs mostly in the hot, dry seasons, and is favored by a lack of moisture between tasseling and denting time. Damage is most noticeable in the base and lower internodes of infected plants. When stalk pith is exposed the interior tissues are shredded and large numbers of tiny black fungus fruiting bodies can be seen on the vascular strands. These black specks, called sclerotia, make the rot look grayish-black. Decayed and weakened stalks lodge easily. Damage may be minimized by practicing rotations with alfalfa, wheat, and other small grain crops.

8. **STALK ROT AND LODGING:** Stalk rots other than Charcoal (No. 7) and Fusarium (No. 9) can cause problems in certain years and locations in Nebraska. Diplodia Stalk Rot *(Diplodia maydis)* infected plants turn grayish-green rather suddenly and die. Split stalks reveal a brown decay within lower internodes. External symptoms of Gibberella Stalk Rot *(Gibberella zeae)* are similar to those of Diplodia except internal tissues are commonly pink or reddish instead of brown. Bacterial Stalk Rot and Soft Rot are caused by one or more species of *Erwinia* and *Pseudomonas.* These commonly occur in mid-summer and are favored by hot, humid weather. The diseased area is usually limited to a single internode above the soil line and is dark brown to black, soft, slimy, and watersoaked.

9. **FUSARIUM STALK ROT:** *Fusarium moniliforme.* This rot is difficult to distinguish from Gibberella Stalk Rot. Closely related fungi cause both diseases. Symptom progression from soon after pollination through premature death and lodging are similar in both diseases, both externally and internally. Fusarium Stalk and Root Rot is more widespread in Nebraska, than is Gibberella Stalk Rot. Control measures are similar. Use of full-seasoned, relatively resistant hybrids are recommended. Since the extent of lodging is a function of time, harvesting as soon as possible reduces field losses. Heavy stands, high rates of nitrogen, and continuous cropping to corn tend to increase the seriousness of stalk rot diseases.

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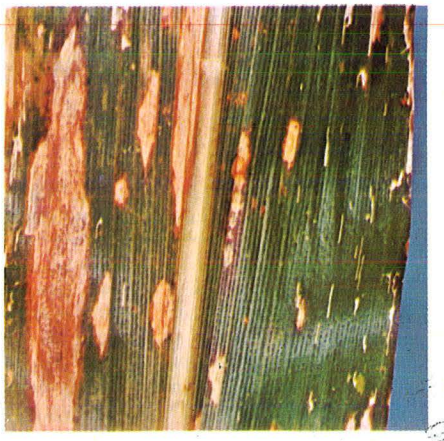
CORN DISEASES

An Aid to Identification and Control

1. BROWN SPOT



2. HELMINTHOSPORIUM LEAF SPOT

3. VIRUS DISEASE

4. SMUT

5. EAR ROT

6. NEMATODE DAMAGE TO ROOTS

7. CHARCOAL STALK ROT

8. STALK ROT AND LODGING

9. FUSARIUM STALK ROT

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