

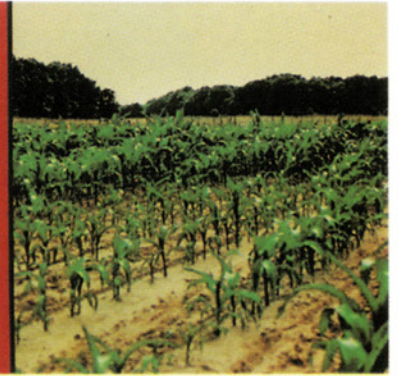
CORN DISEASES II



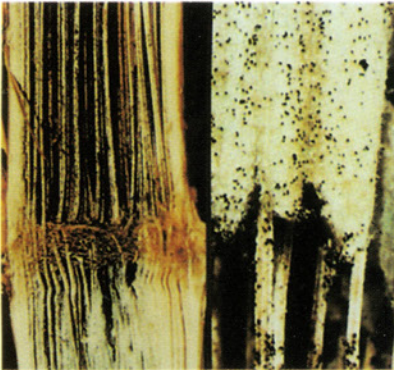
1. Seedling blight



2. Common smut



3. Nematode damage. L, to roots; R, damaged area in a field



4. Charcoal stalk rot



5. Diplodia stalk rot



6. Gibberella stalk rot



7. Anthracnose. L, stalk rot; C, top-dieback; R, leaf blight



8. Kernel red streak



9. Trichoderma ear rot



10. Fusarium kernel or ear rot



11. Gibberella ear rot



12. Diplodia ear rot



13. Nigrospora ear rot



14. Aspergillus ear rot and storage mold

CORN DISEASES II

1. Seedling Blight may be caused by numerous fungi, several in the genus *Pythium*. Seeds may decay in the soil or seedlings rot before emergence. Seedlings that do emerge lack vigor, are yellow, stunted, wilt, and die from a tan to dark-brown decay below the soil line that results in a poor, uneven stand. Damage is more severe in cold, wet soil than in warm soil. The causal fungi survive in soil, crop debris and seed.

2. Common Smut or boil smut, caused by the fungus *Ustilago maydis*, is widely distributed over the world. Small to large galls form on any actively growing, above ground plant part. The galls are covered with a glistening white membrane that later ruptures to release masses of black smut spores. Large galls on the ear and above are more destructive than galls below the ear. Initial infections to young plants come from spores in corn debris, soil or manure. Secondary infections occur in the field.

3. Nematode Damage to corn roots may be caused by a number of different species of plant-parasitic nematodes including awl, burrowing, dagger, lance, needle, ring, root-knot, root-lesion, spiral, sting, stubby-root, stunt, and probably others. Damaged plants are stunted and uneven in height, often chlorotic, may wilt during midday, and lack vigor in oval to irregular areas of fields. Roots that form are usually shallow, stubby and "nubbed-off," or develop indistinct swellings to knot-like galls, and may branch excessively with few or no feeder rootlets. The roots often have dark, discolored areas and may be rotted. Weakened plants produce smaller and fewer ears that are poorly filled. The nematodes may survive in soil indefinitely by infecting a wide range of other host plants.

4. Charcoal Stalk Rot is caused by the fungus *Macrophomina phaseolina*. Pith tissue in the lower stalk may shred. Black specks (sclerotia) form in large numbers on the fibrovascular bundles, giving rotted pith tissue a charcoal-like appearance. Affected stalks may break over (lodge). The disease is most common in the southern half of the USA, especially in the eastern Great Plains. The fungus survives as sclerotia in soil and debris of many crops, including corn.

5. Diplodia Stalk Rot is caused by the fungus *Diplodia maydis*. Affected plants often die early with the leaves suddenly turning a dull grayish-green similar to frost injury. The lower parts of the green stalk turn tan to dark brown and the pith disintegrates. Diseased stalks are weakened and break readily. In the fall, raised black specks (pycnidia), that can not be scraped off with the thumbnail, are clustered near the nodes in dead stalks. The fungus survives in corn debris and seed.

6. Gibberella Stalk Rot is caused by the fungus *Gibberella zeae* (asexual stage, *Fusarium roseum* f. sp. *cerealis* 'Graminearum'). The disease is widely distributed in the northern half of the Corn Belt. External symptoms are much like those of Diplodia Stalk Rot (5). A pink to reddish rot disintegrates the pith. Superficial black specks (perithecia), that are easily scraped off with the thumbnail, form on dead stalks. The fungus survives in corn and cereal debris and rarely on seed.

7. Anthracnose is caused by the fungus *Colletotrichum graminicola*. Enlarging, oval to spindle-shaped, yellow-to-brown lesions with distinct borders form in the leaves. Entire leaves may turn yellow-to-brown and die. Leaf lesions appear mostly on young plants and frequently on the upper leaves after silking. Black streaks appear on the lower stalk late in the season, with the pith dark brown and shredded. The tops of affected plants may turn yellow or red prematurely and the upper or lower stalk may break over. Numerous, black, spiny fruiting bodies (acervuli) form on the surface of the dead tissue. The fungus survives in corn debris and seed.

8. Kernel Red Streak is caused by a toxin secreted by the wheat curl mite (*Aceria tulipae*). Red streaks form on the sides of the kernels and often extended over the caps. Originally this disorder was believed to be a symptom of the wheat streak mosaic virus. The condition is usually most pronounced on kernels near the tip of the ear. Striking differences occur among inbred lines and hybrids in the amount and intensity of red streaking. White corn hybrids generally show less red streaking than most yellow corns.

9. Trichoderma Ear Rot is caused by the fungus *Trichoderma viride*. A white mold growth that later turns green and powdery forms on and between the kernels and husks. It commonly follows damage by other leaf or ear infections. Trichoderma appears when rainfall is above average the month before harvest.

10. Fusarium Kernel or Ear Rot, caused by the fungi *Fusarium moniliforme* and *F. m. var. subglutinans*, is probably the most widespread disease attacking corn ears. The caps of individual kernels or groups of kernels scattered over the ear develop a salmon-pink to reddish-brown discoloration. A powdery, cottony-pink mold forms later. Infection commonly follows some sort of injury. The same fungi may cause a stalk rot that is difficult to tell from Gibberella Stalk Rot (6). The fungi survive in corn debris and seed.

11. Gibberella Ear Rot, sometimes called red ear rot, is caused by the same fungus that produces Gibberella Stalk Rot (6). It is found most frequently in the cooler and more humid areas of the USA when the weather during the month or six weeks prior to harvest is unusually wet. A pink-to-reddish mold, often starting at the ear tip, grows on and between the kernels and tightly stuck husks. Infected ears are toxic to swine, dogs and man.

12. Diplodia Ear Rot or dry rot is caused by the same fungus that induces Diplodia Stalk Rot (5) and seedling blight. Husks of early-infected ears appear bleached or straw-colored in contrast to the green of healthy ears. The entire ear may rot, turn grayish-brown, shrunken, and remain upright with the husks stuck tightly together. Part or all of the ear is rotted with a white mold growing between the kernels. Black specks (pycnidia) may form at the base of the husks and/or on the sides of the kernels. Infections usually begin at the base of the ear and progress toward the tip.

13. Nigrospora Ear Rot is caused by the fungus *Nigrospora oryzae* (perfect stage, *Khuskia oryzae*). Symptoms are not conspicuous until harvest. Ears are lightweight with the cob shredding easily, usually at the butt end. Kernels are loose on the cob, slightly bleached, with numerous round, black specks (spores) forming at the tip end. Affected ears are lightweight and the kernels are poorly finished. The disease occurs when growth is checked by drought, poor soil, frost, insects, or other diseases. The fungus survives in corn debris.

14. Aspergillus Ear Rot and Storage Mold may be caused by a number of species of fungi in the genus *Aspergillus*. The powdery mold growing on and between or within the kernels is usually black, greenish-yellow, or tan. The germ is discolored or dead. The disease is most common in the field when the weather is unusually wet for the month prior to harvest. Affected corn kernels may "cake" together in storage to form a crust, usually at the center and top of a bin. Some strains of the common fungus *Aspergillus flavus*, occasionally produce mycotoxins (aflatoxins) that are harmful if fed to poultry, swine, beef and dairy cattle, or if consumed by humans.

For chemical control suggestions, a listing of resistant varieties, and other control measures, consult the Extension Plant Pathologist at your land-grant university, or your county extension office.