



## **Arkansas Plant Health Clinic Newsletter**

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### **Corn Smut**

Corn Smut, caused by the fungus *Ustilago maydis*, can produce startling symptoms, but is generally not considered a serious pathogen. Annual losses seldom exceed 2% where resistant cultivars are grown. Although all above-ground parts of the plant can be infected, Corn smut is most spectacular when kernels are infected. Large galls form instead of normal kernels when the fungus invades the kernels and starts growing. Galls begins as glistening silvery white to greenish white, but eventually darkens and becomes a mass of powdery, dark olive brown to black spores. The incidence of smut is higher on nitrogen rich soils, or recently manured soils. Resistant varieties are the best method of control. Infected plant parts should be removed before they can sporulate. In some parts of the world infected ears are considered a delicacy while the galls are in the fresh soft stage. It is sold fresh or canned as huitlacoche, cuitlacoche, or maize mushroom.

### **Maíz** by Keiddy Urrea

El carbón del maíz es una enfermedad causada por el hongo *Ustilago maydis*, este cual no es considerado un patógeno que afecta el rendimiento del cultivo de maíz, pero es conocido por los síntomas que produce en los granos. En cultivares resistentes las pérdidas anuales pueden llegar a ser solamente del 2%. El síntoma más característico que causa que el maíz en lugar de formar granos normales, forma una agalla tipo tumor. Las nuevas agallas consisten en tejido fungico de color blanco y luego gris a la madurez. Cuando maduran las agallas se convierten en una masa polvorienta de esporas marrones conocida como teliosporas, al pasar el tiempo estas agallas se secan y son liberadas las esporas que van a servir de inóculo para otras plantas. Se ha reportado que la incidencia de el carbón del maíz es más alta en suelos con alto contenido de nitrógeno alto o suelos en los que recientemente se les ha incorporado material animal. El mejor método para controlar esta enfermedad es el uso de variedades resistentes, así como remover los tumores antes que las esporas se formen. En algunos lugares del mundo los maíces infectados con *Ustilago maydis* son consumidos como una comida especial se pueden comprar frescos o enlatados como: huitlacoche, cuitlacoche, y hongos de maíz.

**Sherrie Smith  
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### **Corn Smut-*Ustilago maydis***



Photo by Allen Bates, University of Arkansas Cooperative Extension

### **Corn Smut-*Ustilago maydis***



Photo by Grant Beckwith, University of Arkansas Cooperative Extension

### **Corn Crazy Top**

Crazy Top of corn, causal agent *Sclerophthora macrospora*, is widespread in the United States.

This disease is one of the several downy mildews that attack corn and sorghum. Symptoms depend on the time of infection and degree of colonization by the pathogen. Excessive tillering (six to ten tillers per plant), rolling, and twisting of the upper leaves, and leafy proliferation of the tassel are common symptoms. Leaves may be narrow, straplike, leathery, chlorotic, and stunted. The oospores are 45-75um in diameter, hyaline to yellow, globose, with granular contents. Sporangia are lemon shaped 30-65 x 60-100, attached to short, simple sporangiophores emerging from stomata. Crazy top is a problem when soils have been flooded shortly after planting or before plants are in the four to five leaf stage. Water trapped in the whorl of small plants can also lead to infection. Soil or leaf saturation for 24-48 hours is enough for infection to occur. There are no chemical controls for Crazy top. Good soil drainage is the only preventative.

### **Corn Crazy Top- *Sclerophthora macrospora***



Photo by Sherrie Smith, University of Arkansas Cooperative Extension

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## Corn Crazy Top- *Sclerophthora macrospora*



Photo by Sherrie Smith, University of Arkansas Cooperative Extension

## Corn Rust

Two types of corn rust infect corn in Arkansas. Common Corn Rust caused by *Puccinia sorghi* is seen nearly every year but doesn't usually cause serious yield loss. Common Rust development requires relatively cool temperatures (54 to 82 degrees F) and nearly 100% relative humidity for about six hours. Young leaf tissue is more susceptible to infection than emerged leaves. After tasseling, leaves should be relatively immune to further common rust development. Common Rust has

cinnamon-brown colored round to elongated pustules that frequently form in bands on the lower part of the leaf. Common Rust pustules form on both upper and lower sides of an individual leaf, distinguishing Common from Southern Rust, which predominately sporulates on the upper leaf surface. Unlike Common Rust, Southern Rust, *Puccinia polysora*, is favored by high temperature. The pustules are smaller, rounder and a lighter orange in color than common rust. Unlike Common Rust they develop primarily on the upper surface of the leaf. Southern Rust can cause serious yield losses as heavily infected leaves are killed. There are resistant hybrids available. Fungicides labeled for rust control in Arkansas are Tilt, Quilt, Propimax, Stratego, and Headline, among others. Homeowners must rely on garden fungicides containing chlorothalonil. The use of resistant cultivars is recommended when possible.

## Top: Common Corn Rust- *P. sorghi*, Bottom: Southern Corn Rust- *P. polysora*

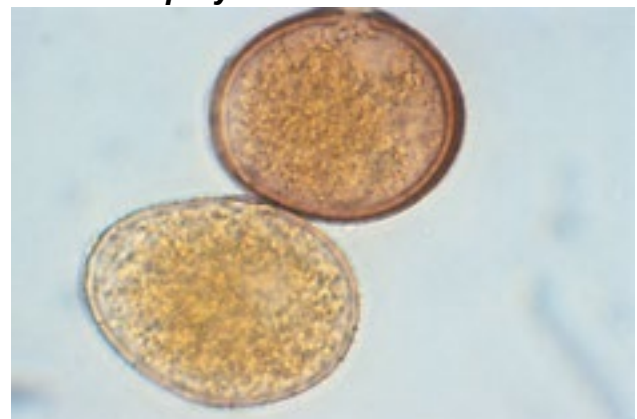


Photo by D.G. White APS Image Library



## **Corn Southern Rust-*Puccinia polysora***



Photo by Sherrie Smith, University of Arkansas Cooperative Extension

**Left: Common Corn Rust-*P. sorghi*,  
Right: Southern Corn Rust-*P. polysora***



Photo by D.G. White APS Image Library

## **Southern Corn Leaf Blight**

Southern corn leaf blight (*Bipolaris maydis*) is not generally regarded as a serious problem as good resistance to the disease is available. However, early heavy infection in a susceptible cultivar can cause severe damage to leaves, predisposing the plant to stalk rot. Spindle shaped tan lesions with rounded ends, and buff to brown borders occasionally with a red tint, appear first on lower leaves. Race O normally attacks leaves only, whereas Race T attacks leaves, leaf sheaths, ear husks, ears, cobs, and stalks. Stalk and leaf sheath infections begin as purple spots that develop tan-gray centers. Control consists of planting resistant varieties, deep tillage to bury debris, crop rotation, and fungicides where warranted. Fungicides such as Tilt are effective against the disease.

## **Southern Corn Leaf Blight-*Bipolaris maydis***



Photo by Sherrie Smith, University of Arkansas Cooperative Extension



## Northern Corn Leaf Blight

Northern corn leaf blight is common here in the Midsouth with our warm, humid summers. The disease is caused by *Setosphaeria turnica*, and causes gray-green, elliptical, or cigar-shaped lesions that are 3-15cm long. Mature lesions become tan with distinct dark zones of sporulation. Northern corn leaf blight can develop very rapidly, resulting in complete blighting of the leaves. There are many resistant cultivars to choose from. Cultural controls consist of deep tillage to bury debris, crop rotation, and fungicides where they are warranted.

### Northern Corn Leaf Blight- *Setosphaeria turnica*



Photo by Sherrie Smith, University of Arkansas Cooperative Extension

## Fusarium Ear Rot

Fusarium Kernel or Ear Rot is found wherever corn is grown. The disease can be severe when hot, dry weather occurs at and after flowering.

Symptoms are groups or single kernels with whitish pink to lavender fungal growth on kernels and/or on silks. Fungal growth at the tip of the ear has been associated with earworm damage. In severe cases, the entire ear may be covered with the fungus. The causative agents are species of fusarium; *Fusarium moniliforme*; *F. proliferatum*; and *F. subglutinans*. Infection by fusarium can reduce yields and quality, and result in mycotoxin accumulation in the grain. Fusarium overwinters on crop debris. Plowing under the debris may be helpful. Management strategies consist of debris management, proper fertility, moisture control, and insect control. Hybrids vary widely in their susceptibility.

### Corn Fusarium Ear Rot- *Fusarium* spp.

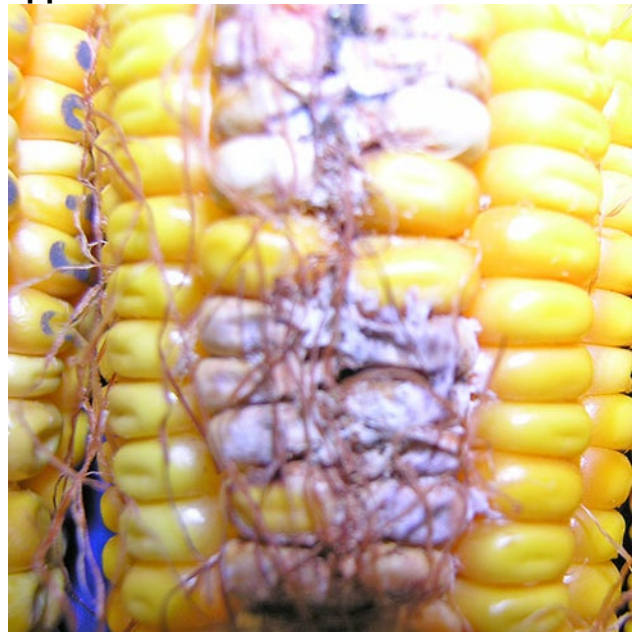


Photo by Sherrie Smith, University of Arkansas Cooperative Extension



## **Gibberella Stalk Rot**

Gibberella Stalk Rot, caused by *Gibberella maydis*, has symptoms that are like those of other stalk rots. Plants wilt, the leaves change to a dull green, and lower stalks become straw colored. Red discoloration inside the stalk and disintegration of the pith are diagnostic for Gibberella stalk rot.

## **Corn Gibberella Stalk Rot- *Gibberella maydis***



Photo by Sherrie Smith, University of Arkansas  
Cooperative Extension

## **Diplodia Ear Rot**

Weather conditions this growing season have been ideal for corn diseases. Diplodia Ear Rot is most severe when corn follows corn and wet weather occurs shortly after silking. The disease is caused by the fungus, *Stenocarpella maydis*. Symptoms are bleached to straw-colored husks. A conspicuous gray to white mycelial growth may be observed over the entire ear. The growth typically starts at the base of the ear and moves upward. The ear may appear shrunken with the infected kernels glued to the husk by the fungal growth. Late in the season, black pycnidia may be observed on the husks, kernels, cobs, and rotted stalks. *Stenocarpella maydis* is also responsible for an important stalk rot of corn. It can be distinguished from other stalk rots by the presence of sub epidermal, minute, dark brown to black pycnidia in the rind tissue of the lower stem. The two most important methods of reducing the incidence of Diplodia ear and stalk rot are crop rotation and fall tillage of corn residue.

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### **Corn Diplodia Ear Rot- *Stenocarpella maydis***



Photo by Sherrie Smith, University of Arkansas Cooperative Extension

### **Charcoal Rot**

Charcoal Rot symptoms are like other stalk rots. It can be differentiated by the presence of

numerous, minute, black sclerotia on the vascular bundles and inside the rind, causing the interior of the stalk to appear gray black. The causal organism is *Macrophomina phaseolina*, the same fungus that causes charcoal rot in beans. Root stress related to drought and/or too much water can cause charcoal rot.

### **Corn Charcoal Rot-*Macrophomina phaseolina***



Photo by Sherrie Smith, University of Arkansas Cooperative Extension

### **Anthracnose Stalk Rot**

Anthracnose Stalk Rot, caused by *Colletotrichum graminicola*, is recognized late in the season by the shiny black color on the outer stalk. The black color may be uniform or

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blotchy. The stalk can be easily crushed at the point of discoloration. The pathogen may rot several internodes on the stalk. Balanced fertility and good water management reduces the incidence of anthracnose when coupled with cultivars with some resistance.

### **Corn Anthracnose Stalk Rot-** *Colletotrichum graminicola*



Photo by D.G. White, APS Image Library

### **Corn Red Leaf**

Red leaves and/or red stems with barren stalks may be caused by a broken midrib, or low fertility, dense plant populations, aphid, or herbicide damage, chewed off silks, or poor timing of silking and pollen shed. An accumulation of sugars and other photosynthetic products in leaves and sheaths of barren stalks produces the red coloration.

### **Corn Red Leaf (barren cob)-** **Abiotic**



Photo by Sherrie Smith, University of Arkansas Cooperative Extension

### **Corn Red Leaf-Abiotic**



Photo by Sherrie Smith, University of Arkansas Cooperative Extension

### **Corn Kernel Abortion**

It is not unusual to see kernels abort at the tip of the ear since they are the youngest and the farthest from the incoming food source. This occurs in the blister or early milk stages.





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Occasionally, kernels may abort in 2 or 3 columns that run the entire length of the ear. Basically, any kind of stress that reduces the photosynthate supply may cause kernel abortion. Drought stress is a major culprit.

### **Corn Kernel Abortion-Abiotic**



Photo by Sherrie Smith, University of Arkansas Cooperative Extension

### **Corn Poor Pollination**

We've had several examples of poor pollination of corn, resulting in substandard ears. Poor pollination is due to environmental issues such as drought, winds, storms, and nutritional issues.

### **Corn Poor Pollination-Abiotic**



Photo by Sherrie Smith, University of Arkansas Cooperative Extension

### **Corn Stinkbug Damage**

Several species of stinkbugs feed on corn as well as on many other vegetables, fruits, nuts, and field crops. Stinkbug species in Arkansas include the Green stinkbug, *Acrosternum hilare* (Say), the Southern green stinkbug, *Nezara viridula* (L.), the Brown stinkbug, *Euschistus servus* (Say) and the Rice stinkbug, *Oebalus pugnax*. Adult stinkbugs are shield-shaped insects with piercing sucking mouthparts. They get their common name "Stinkbug," from the strong odor they emit when disturbed. Stink bugs pierce fruits and nuts and inject enzymes from their salivary glands to liquefy and predigest the plant material. Damage to corn is dark sunken spots on individual kernels.

### **Corn Stinkbug Damage-Abiotic**



Photo by Sherrie Smith, University of Arkansas Cooperative Extension



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This bulletin from the Cooperative Extension Plant Health Clinic (Plant Disease Clinic) is an electronic update about diseases and other problems observed in our lab each month. Input from everybody interested in plants is welcome and appreciated.

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