

# Commercial Crop Production: Field Crops

## Corn

### Disease

Symptoms, source of inoculum and management of corn diseases.

Disease	Symptoms	Source of Inoculum	Management
Charcoal Rot ( <i>Macrophomina phaseolina</i> )	Injury from this disease usually does not become evident until plants approach maturity. Diseased plants exhibit poorly developed ears, premature ripening, lodging and drying of the stalk. Stalks are soft and discolored at the base, and the pith becomes shredded.	This fungus survives in old plant debris or in the soil.	Rotate crops. Bury stubble. Maintain balanced potassium/nitrogen rates.
Common Rust ( <i>Puccinia sorghi</i> )	Common rust can be recognized by small oval- to elongated-pustules, which are at first cinnamon-brown and then become brownish-black as the corn matures. The pustules may appear on any aboveground part of the plant but are most abundant on the leaves – scattered over both surfaces.	Spores usually are windblown from the south. An alternate host is the wood sorrel ( <i>Oxalis</i> sp.).	Most hybrids are tolerant to this disease. Always use the recommended hybrids for your area.
Fusarium Stalk Rot ( <i>Fusarium</i> spp.)	Leaves of infected plants become grayish-green as plants approach maturity. Softening and discoloration of the exterior of lower internodes occur. When stalks are affected with stalk rot, they split and generally will show a reddish discoloration of the diseased area.	This fungus lives in old stubble or in the soil.	Practice crop rotation. Plow crop residue under. Make sure adequate potassium is applied with high nitrogen rates.
Gray Leaf Spot ( <i>Cercospora zeae-maydis</i> )	The early lesions produced on the corn leaves by <i>Cercospora zeae-maydis</i> are yellow to tan and look similar to those produced by other diseases, except they have a faint watery halo that can be seen when held up to the light. After about two weeks, the lesions appear tan to brown and rectangular shaped, bordered by the veins of the leaf. When fully expanded, individual lesions may be 3 to 4 inches long and 1/16- to 1/8-inch-wide, depending on the distance between veins. If several infections occur near each other on the same leaf, however, a broader lesion will result.	The fungus causing gray leaf spot overwinters in and on corn debris left above and on the soil surface.	Hybrids are available with moderate resistance. Crop rotation and clean plowing are effective in reducing the level of surviving fungus in fields.
Northern Corn Leaf Blight ( <i>Exserohilum tursicum</i> )	Leaves of infected plants have a few to numerous elongated (up to 1 inch by 6 inches) leaf spots that are tan but reveal black spore growth at maturity.	Carried on the seed and in old plant refuse, spores also are readily windborne	Disease resistance is available. The hybrids should also be ones recommended for your area.

Disease	Symptoms	Source of Inoculum	Management
Smut ( <i>Ustilago maydis</i> )	All aboveground parts of the plant are susceptible, particularly the young, actively growing embryonic corn tissue. Symptoms are easily recognized. Galls are first covered with a glistening greenish-white to silvery-white membrane. Except for galls on leaves, the interiors of the galls soon darken, with the membrane rupturing to expose millions of greasy to powdery, sooty spores known as chlamydo spores or teliospores. Galls on leaves seldom develop beyond pea-size, becoming hard and dry without rupturing. Early infection may kill young plants, but not often.	The teliospores of this fungus overwinter on the soil surface.	Use hybrids recommended for your area. Most have adequate resistance.
Southern Leaf Blight ( <i>Bipolaris maydis</i> = <i>Helminthosporium maydis</i> )	Leaves of infected plants have numerous elongated spots between the veins. The spots are buff to reddish-brown.	Carried on the seed and in old plant refuse, spores also are readily windborne.	Use only seed produced by normal tasseling (N). The hybrids also should be ones recommended for your area.
Southern Rust ( <i>Puccinia polysora</i> )	Southern rust is recognized by small circular to oval pustules, which are light cinnamon-brown. The pustules may appear on leaves and sheaths but are most abundant on the leaves.	Spores are windblown from the south. No alternate host is known.	Use hybrids tolerant to this disease. Fungicides might be necessary if southern rust symptoms are expressed prior to soft dough growth stage.

## Management of Corn Diseases Using Fungicides

Based on fungicide experimentation over the past five years, it has been determined that fungicides should only be used if corn foliar diseases are present and threaten the ear leaf with diseased areas covering 5% or more.

## Fungicide Efficacy for Management of Corn Diseases — January 2024

The Corn Disease Working Group (CDWG), which includes LSU AgCenter pathologists, develops ratings for how well fungicides control major corn diseases in the United States. The ratings are determined by field testing the materials over multiple years and locations. Ratings are based on the product's level of disease control and do not necessarily reflect yield increases obtained from product application. A product's efficacy depends upon proper application timing, rate and application method as determined by the product label and overall disease level in the field at the time of application. Differences in efficacy among each fungicide product were determined by directly comparing products in field tests using a single application of the labeled rate. **The table includes marketed products available that have been tested over multiple years and locations and is not intended to be a list of all labeled products.**

**Efficacy categories:** **NR**=Not Recommended; **P**=Poor; **F**=Fair; **G**=Good; **VG**=Very Good; **E**=Excellent; **NL**= Not Labeled for use against this disease; **U**= Unknown efficacy or insufficient data to rank product.

**Link to publication:** <https://cropprotectionnetwork.org/publications/fungicide-efficacy-for-control-of-corn-diseases>

## Recommended fungicides, rates and application timing for corn diseases.

### Leaf Blights (primarily *Helminthosporium* and *Excerohilum* spp.)

Product Choices <sup>1</sup>	Product Mode of Action Group <sup>2</sup>	Rate <sup>3</sup>	Time of Application	PHI <sup>4</sup>
Adastrio	3, 7, 11	7-9 fl oz	See label	30
AmTide Propiconazole 41.8% EC	3	2-4 oz	At first appearance	30
Avaris	3, 11	7-14 oz	At first appearance	30
Affiance	3, 11	10-17 fl oz	See label	7
Aproach Prima	3, 7	3.4-6.8	See label	30
Bumper	3	2-4 fl oz	At first appearance	30
Delaro	3, 11	8-12 fl oz	At first appearance	14
Fitness	3	2-4 fl oz	At first appearance	30
Headline AMP	3, 11	10-14.4 fl oz	Prior to disease development	20
Headline SC	11	6-12 fl oz	Prior to disease development	7
Lucento	3, 7	3-5.5 fl oz	At first appearance	10
Orius 3.6F	3	4-6 fl fl oz	Prior to disease development	36
Miravis Neo	3, 7, 11	13.7 fl oz	See label	30
Priaxor SC	7, 11	4-8 fl oz	Prior to disease development	21
PropiMax	3	2-4 fl oz	At first appearance	30
Quadris	11	6.2-9 fl oz	Prior to disease development	7
Quadris S	11	9.2-15.4 fl oz	Prior to disease development	7
Quilt	3, 11	7-14 fl oz	At first appearance	30
Quilt Xcel	3, 11	7-14 fl oz	At first appearance	30

Product Choices <sup>1</sup>	Product Mode of Action Group <sup>2</sup>	Rate <sup>3</sup>	Time of Application	PHI <sup>4</sup>
Revytec	3, 7, 11	8-15 fl oz	See label	21
Stratego	3, 11	10-12 fl oz	At first appearance	30
Stratego YLD	3, 11	4-5 fl oz	At first appearance	14
Tebuzol 3.6F	3	4-6 fl oz	Prior to disease development	36
Tilt	3	2-4 fl oz	At first appearance	30
TopGuard	3	7-14 fl oz	No later than R4	7
TopGuard EQ	3, 11	5-7 fl oz	At first appearance	7
Veltyma	3, 11	7-10 fl oz	See label	21
Xyway	3	See label	In-furrow at planting	-

<sup>1</sup> Reference to commercial or trade names is made with the understanding that no discrimination is intended nor endorsement of a particular product by LSU or the LSU AgCenter is implied.

<sup>2</sup> Mode of action groups are determined by the Fungicide Resistance Action Committee (FRAC).

<sup>3</sup> Rates are the amount of formulation (product) per acre unless otherwise indicated.

<sup>4</sup> Preharvest interval (PHI) is the minimum number of days allowed between the last application and harvest.

**Rust (Common only)**

Product Choices <sup>1</sup>	Product Mode of Action Group <sup>2</sup>	Rate <sup>3</sup>	Time of Application	PHI <sup>4</sup>
Adastrio	3, 7, 11	7-9 fl oz	See label	30
Quadris	11	6.2-9 fl oz	Prior to disease development	7
Quadris S	11	6.2-9 fl oz	Prior to disease development	7

**Rusts (Common and southern)**

Product Choices <sup>1</sup>	Product Mode of Action Group <sup>2</sup>	Rate <sup>3</sup>	Time of Application	PHI <sup>4</sup>
Adastrio	3, 7, 11	7-9 fl oz	See label	7
AmTide Propiconazole 41.8% EC	3	2-4 fl oz	At first appearance	30
Avaris	3, 11	10.5-14 fl oz	At first appearance	30
Affiance	3, 11	10-17 fl oz	See label	7
Aproach Prima	3, 11	3.7-6.8	See label	30
Bumper	3	4 fl fl oz	At first appearance	30
Delaro	3, 11	8-12 fl oz	At first appearance	14
Fitness	3	4 fl oz	At first appearance	30
Headline AMP	3,11	10-14.4 fl oz	Prior to disease development	20
Headline SC	11	6-12 fl oz	Prior to disease development	7
Lucento	3, 7	3-5.5 fl oz	At first appearance	10
Miravis Neo	3, 7, 11	13.7 fl oz	See label	30
Orius 3.6F	3	4-6 fl oz	Prior to disease development	36
Priaxor SC	7, 11	4-8 fl oz	At first appearance	21

Product Choices <sup>1</sup>	Product Mode of Action Group <sup>2</sup>	Rate <sup>3</sup>	Time of Application	PHI <sup>4</sup>
PropiMax	3	2-4 fl oz	At first appearance	30
Quilt	11, 3	10.5-14 fl oz	At first appearance	30
Quilt Xcel	11, 3	10.5-14 fl oz	At first appearance	30
Revytek	3, 7, 11	8-15 fl oz	See label	21
Stratego	11,3	10-12 fl oz	At first appearance	30
Stratego YLD	11, 3	4-5 fl oz	At first appearance	14
Tebuzol 3.6F	3	4-6 fl oz	Prior to disease development	36
Tilt	3	4 fl oz	At first appearance	30
TopGuard	3	7-14 fl oz	No later than R4	7
TopGuard EQ	3, 11	5-7 fl oz	At first appearance	7
Veltyma	3, 11	7-10 fl oz	See label	21

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<sup>4</sup> Preharvest interval (PHI) is the minimum number of days allowed between the last application and harvest.

The corn section was revised October 2024 by Boyd Padgett.