

Commercial Crop Production

Field Crops – Corn

DISEASE

Symptoms, source of inoculum and management of corn diseases.

Charcoal Rot (*Macrophomina phaseolina*)

Symptoms: 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.

Source of Inoculum: This fungus survives in old plant debris or in the soil.

Management: Rotate crops. Bury stubble. Maintain balanced potassium/nitrogen rates.

Common Rust (*Puccinia sorghi*)

Symptoms: 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.

Source of Inoculum: Spores usually are windblown from the south. An alternate host is the wood sorrel (*Oxalis* sp.).

Management: Most hybrids are tolerant to this disease. Always use the recommended hybrids for your area.

Fusarium Stalk Rot (*Fusarium* spp.)

Symptoms: 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.

Source of Inoculum: This fungus lives in old stubble or in the soil.

Control: Practice crop rotation. Plow crop residue under. Make sure adequate potassium is applied with high nitrogen rates.

Gray Leaf Spot (*Cercospora zea-maydis*)

Symptoms: The early lesions produced on the corn leaves by *Cercospora zea-maydis* 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.

Source of Inoculum: The fungus causing gray leaf spot overwinters in and on corn debris left above and on the soil surface.

Management: 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 (*Exserohilum tursicum*)

Symptoms: 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.

Source of Inoculum: Carried on the seed and in old plant refuse, spores also are readily windborne.

Management: Disease resistance is available. The hybrids should also be ones recommended for your area.

Smut (*Ustilago maydis*)

Symptoms: 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 chlamydospores 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.

Source of Inoculum: The teliospores of this fungus overwinter on the soil surface.

Control: Use hybrids recommended for your area. Most have adequate resistance.

Southern Leaf Blight (*Bipolaris maydis* = *Helminthosporium maydis*)

Symptoms: Leaves of infected plants have numerous elongated spots between the veins. The spots are buff to reddish-brown.

Source of Inoculum: Carried on the seed and in old plant refuse, spores also are readily windborne.

Management: Use only seed produced by normal tasseling (N). The hybrids also should be ones recommended for your area.

Southern Rust (*Puccinia polysora*)

Symptoms: 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.

Source of Inoculum: Spores are windblown from the south. No alternate host is known.

Management: Use hybrids tolerant to this disease. Fungicides might be necessary if southern rust symptoms are expressed prior to soft dough growth stage.

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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 2020

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

Table 1. Recommended fungicides, rates and application timing for corn diseases.

Target	Product Choices ¹ and Product Mode of Action Group ²		Rate ³	Time of Application	PHI ⁴
Leaf Blights (primarily <i>Helminthosporium</i> and <i>Excerohilum</i> spp.)	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
	Approach 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
	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 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	-	
Rust (Common only)	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

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Target	Product Choices ¹ and Product Mode of Action Group ²		Rate ³	Time of Application	PHI ⁴
Rusts (Common and southern)	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
	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 EQ	3,11	5-7 fl oz	At first appearance	7	
Veltyma	3,11	7-10 fl oz	See label	21	

¹Reference 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.

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

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

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

The corn section was revised October 2022 by Boyd Padgett.