

Corn Diseases --- What can we do to prepare for 2011??

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I keep hearing people talk about the elusive “typical growing season,” but I have yet to see one since I started work in Arkansas. For the third year in a row, Mother Nature has thrown Arkansas producers a curve ball in the way of extreme weather conditions.

We had very cool and wet conditions early in 2008 and 2009, which pushed the planting window back as much as a month in some areas. This late planting increased the use of fungicides due to increased disease pressure from southern rust and northern corn leaf blight.

In 2010, the growing season started off in a more positive way than the previous two years; however, Mother Nature decided we had enough rain from the previous years to make the crop. She pulled an umbrella over Arkansas during the summer for more than 2½ months and also provided extreme temperatures both during the day and night. The only way these weather conditions are typical and/or wanted by growers in Arkansas is if they were enjoying a season-long vacation at the beach. The corn growers in Arkansas did experience a light year with some diseases due to the hot and dry conditions, but were hit with widespread aflatoxin problems. Although we experience small, isolated issues with aflatoxin every year, this was the first major outbreak of aflatoxin since 1998. Reminiscent of 1998, there were many truck loads of corn rejected along with a few fields that were never harvested throughout the state, with aflatoxin levels ranging from 21 to >1000 ppb.



I have been asked several times since the year began: “What now? I am doing everything I can to produce a corn crop but still get hit by disease and aflatoxin.” The answer to this question is neither easy nor always straightforward. The No. 1 thing you can do to minimize the impacts of disease and aflatoxin in your corn crop is to stack the deck in your favor at the beginning of the growing season by considering the following:

University of Arkansas, United States Department of Agriculture and County Governments Cooperating.

Preseason Management Options

- Can I produce corn in this field? Need good water and fertility
 - Do not plant dry land corn or in fertility stricken fields
- Take soil samples and fertilize appropriately for your yield potential
- Know and understand your fields' history with diseases
 - Diseases --- southern rust, northern corn leaf blight, gray leaf spot etc.
 - What's your rotation?
 - Tillage practices
 - Corn after corn and minimum tillage increases problems with northern corn leaf blight and gray leaf spot
- Choose the correct Hybrid
 - Hybrids with a package of good overall disease and insect resistance
 - Adapted hybrids tested in Arkansas
 - Hybrids with good growth characteristics
 - Tight shuck cover
 - Good stalk strength
- Plant Early
 - Before April 15 ---- will out run most disease and aflatoxin
 - After April 15 --- increased risk with disease and aflatoxin
- Choose appropriate seed treatment
 - Fungicide seed treatments have proven benefits in Corn
- Root-knot nematode not a factor on corn planted early
 - Nematicides not recommended on early planted corn
 - May see yield response for corn planted in May or later

Once you have planted the corn crop, you have used up most of your bullets for managing diseases and aflatoxin. This is not meant to scare anyone from growing corn, just a harsh reality if you miss the opportunity to start the season off on the right foot. So, what can you do to manage or minimize these issues during the growing season?

Within Season Prevention/ Management Options

- Maintain a healthy crop
 - Be timely with fertility
 - Irrigate well and often
 - Manage weeds early
 - Know disease package of your hybrid
 - Scout your crop weekly--- the entire field not just the edge
 - See pictures attached for disease symptoms
 - If disease is present or you have increased risk for disease development
 - Apply correct fungicide and rate
 - We do not recommend applying fungicides at reduced rates
 - We do not recommend applying fungicides for **plant health**.
- We currently have resistance build up to strobilurins in**

soybeans in TN and KY--- Arkansas and corn could be next. With this in mind, be good stewards with fungicides and only utilize them when needed.

- In high risk fields --- preventative fungicides are recommended at brown silk unless disease is present

Table 1. Fungicide Use Recommendations for Arkansas

Management Practice	Disease Risk	Fungicide Recommendation
Corn planted before April 15, irrigated, well-managed, conventional tillage, and good crop rotation	LOW RISK	FUNGICIDE USE VERY UNLIKELY
Corn diagnosed with common rust in May or early June	LOW RISK	FUNGICIDE USE VERY UNLIKELY
Corn with low yield potential (<140 bu/A) or dryland corn most years	PROBABLY NOT WORTH SPRAYING (economically)	
Corn planted consistently in minimum till or no-till systems, lots of old corn stalks and cover around	MODERATE RISK	BUDGET A FUNGICIDE
Corn planted after April 15, or replanted, irrigated, well-managed	MODERATE RISK	BUDGET A FUNGICIDE
Corn planted after corn, regardless	MODERATE RISK	BUDGET A FUNGICIDE
Corn diagnosed with southern rust (orange rust) in June or early July	HIGH RISK	RECOMMEND A FUNGICIDE
Corn hybrids not adapted to the South, not tested in the U of A Variety Testing Program	HIGH RISK	RECOMMEND A FUNGICIDE

* We strongly advise that all fields be scouted for disease and suspicious corn rust samples be sent to the Plant Health Clinic in Lonoke, AR to verify whether it is common rust or southern rust.

- For added suppression of aflatoxin
 - The biological control Afla-Guard has been shown to suppress aflatoxin in some situations.
 - Good suppression (60-75%) but will not eliminate aflatoxin
 - Cannot take a high risk field and make low risk
 - For example: a dry land field with 2000 ppb potential of aflatoxin would only be reduced to 500 ppb assuming 75% control
 - Not economical for highly productive fields where fertility and water are not issues

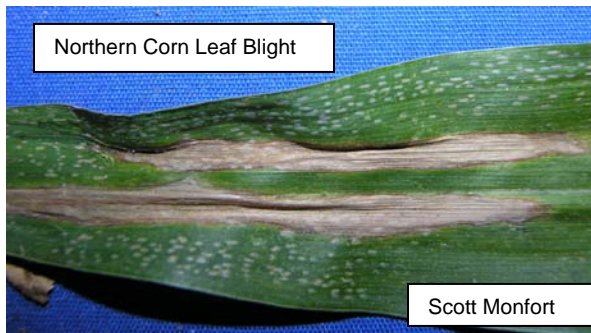
- More effective in reducing aflatoxin in fields with light to moderate risk
 - Fields with fertility and watering issues in extreme years
 - Hybrids with loose shuck cover
 - Hybrids susceptible to disease and insects
 - Dryland fields in years with light to moderate stress --- some rain etc. through season
 - Dryland corners

To help growers and consultants accurately identify corn diseases, we included some descriptions and pictures below:

Major Diseases in Corn in Arkansas:

Symptoms

Gray Leaf Spot - Leaf lesions develop on the older, bottom leaves first, and the disease moves up the leaves as the plant matures. The tan to gray lesions are narrow and rectangular and occur typically between the leaf veins.

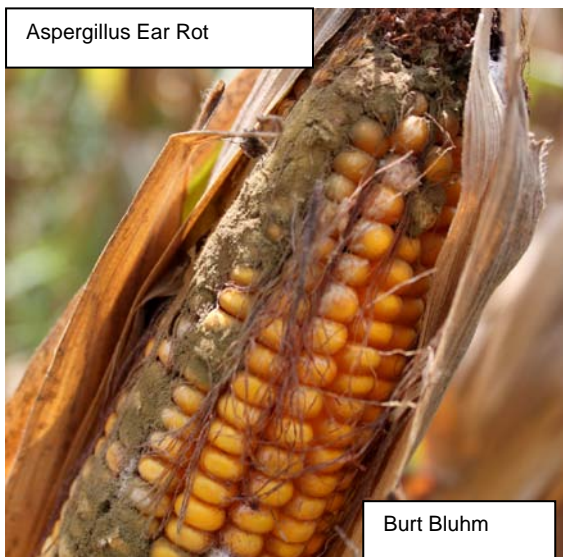


Northern Corn Leaf Blight – Leaf Lesions are long (one-half to 1½ by 2 to 6 inches) cigar-shaped gray-green or tan lesions developing on lower leaves eventually spreading to upper parts of the plants including leaf and husk.

Southern Rust - Lesions or pustules that contain the rust spores appear on all above-ground parts but are most abundant on the leaf. Pustules are circular to elongate in size containing orange to brown masses of spores that erupt through the upper leaf surface. Leaves, stalks, and the husks on ears may be infected. Southern rust typically sporulates on the upper leaf surface. In contrast, common rust produces spores (dark red in color) on both surfaces of the leaf.



If southern rust is a risk, use a fungicide containing propiconazole like Tilt, Propimax, Quilt, or Stratego. Fungicides like Quadris or Headline alone do not have curative properties and may not be as effective on controlling this disease unless it is applied before infection occurs. To increase coverage, we recommend increased water volumes of at least 5 to 10 gallons/acre. Also, fungicides will typically need 4 hours drying time before irrigation or rain events to be most effective.



Aspergillus Ear Rot - *Aspergillus flavus* produces aflatoxin. The fungus appears as an olive-green, powdery mass on and between kernels. Growth is favorable during hot, dry weather, and the fungus is often observed on exposed tips and nubbin ears.

Minor Diseases: ---- Typically not a problem in Arkansas

