5-30-2019

Delayed Planting and Diseases in 2019

Alison E. Robertson  
_Iowa State University_, alisonr@iastate.edu

Daren S. Mueller  
_Iowa State University_, dsmuelle@iastate.edu

Ethan Stoetzer  
_Iowa State University_, stoetzer@iastate.edu

Follow this and additional works at: https://lib.dr.iastate.edu/cropnews

Part of the Agricultural Science Commons, and the Agriculture Commons

Recommended Citation

https://lib.dr.iastate.edu/cropnews/2567

The Iowa State University Digital Repository provides access to Integrated Crop Management News for historical purposes only. Users are hereby notified that the content may be inaccurate, out of date, incomplete and/or may not meet the needs and requirements of the user. Users should make their own assessment of the information and whether it is suitable for their intended purpose. For current information on integrated crop management from Iowa State University Extension and Outreach, please visit https://crops.extension.iastate.edu/.
Delayed Planting and Diseases in 2019

Abstract
This growing season, delayed planting, combined with continued cool and wet conditions have taken their toll on crops that were planted in the brief periods of optimum weather. Given that there is already delayed emergence, and the wet and cool weather patterns are expected to continue, we could very well see continued delayed growth and development of crops. This means that we can also expect reaching grain fill later in the growing season, which creates a window of opportunity for plant diseases to impact total yield. The earlier a plant disease occurs during grain fill, the more likely it is to negatively impact yield. This article will discuss the potential for higher incidence of some diseases, and how you can go about managing their impacts to the best of your abilities.

Disciplines
Agricultural Science | Agriculture
This growing season, delayed planting, combined with continued cool and wet conditions have taken their toll on crops that were planted in the brief periods of optimum weather. Given that there is already delayed emergence, and the wet and cool weather patterns are expected to continue, we could very well see continued delayed growth and development of crops. This means that we can also expect reaching grain fill later in the growing season, which creates a window of opportunity for plant diseases to impact total yield. The earlier a plant disease occurs during grain fill, the more likely it is to negatively impact yield. This article will discuss the potential for higher incidence of some diseases, and how you can go about managing their impacts to the best of your abilities.

The Disease Triangle

When evaluating plant disease risk, it’s always best to refer to what plant pathologists call “The Disease Triangle.” The triangle is a visual representation of the three things that must happen in order for disease to occur. Darcy Telenko, field crop pathologist with Purdue University, provided a great info-graphic that helps illustrate how manipulating the three points (pathogen, host and environment) affects disease presence and pressure. Telenko’s graphic uses Tar Spot as an example. Being able to manipulate all three variables can help reduce severity and disease impact.
Figure 1: A diagram on how the pathogen, host, and environment can influence tar spot disease triangle. Red denotes the factor that’s being reduced, such as decreased inoculum viability, reduced host susceptibility, and/or unfavorable environmental conditions leading to less disease.

The Disease Triangle: Environment

Many corn and soybean diseases thrive in cool wet environments. When identifying the possibility of disease occurrence, it’s best to evaluate future weather forecasts, as well as keep track of the growth stages of crops during the particular time period, as the conditions maybe conducive to disease development. According to the USDA Midwest Ag-Focus Climate Outlook (5/16/2019), wet conditions will continue as summer progresses, making development and disease a “likely a problem for corn.” Such conditions will leave corn development (or grainfill) in need of growing degree days this season, and forecasts offer no relief on the horizon for the Midwest.

The Disease Triangle: Pathogen

Given the potential that we’ll have a suitable growing environment for various pathogens, it’s best to determine whether or not your field has pathogen inoculum that will be able to thrive in this environment.

Plant pathogens overwinter on diseased plant tissue. While it is always important to perform quality and regular crop scouting in your fields, years like this highlight just how
beneficial keeping accurate records of annual field conditions can be. With a knowledge of what you saw in your fields in prior years, you can be more equipped to handle potential diseases in future years. Regular scouting this year will be very important so that we can discover diseases early, and have the best chance at managing them. It will also allow us to assess future risk next season, and help us to better manage those risks.

According to preliminary testing results from the University of Wisconsin-Madison, on average, tar spot has a 20 percent spore survival rate throughout the winter. This means that inoculum will be present in fields in Eastern Iowa, which had confirmed cases of tar spot in 2018, and the forecasted cool, wet conditions may favor disease development. Consequently, these fields and adjacent fields should be scouted regularly for tar spot so that management practices, such as fungicide applications, can be implemented quickly if necessary.

The Disease Triangle: Host

The final piece of the triangle is the host, and here we need to think about genetics and growth stage of the host when infection occurs. A pathogen may infect a host with resistance but disease either fails to develop, or develops very slowly. A pathogen may also infect a host at a growth stage that is not detrimental to yield.

In soybeans, one such disease to be mindful of this growing season is white mold, which is most yield limiting when it starts during flowering. Given the cool wet conditions slowing down soybean growth, it’s important to scout for this disease, especially due to the fact that the senescing flowers may coincide more with the release of ascospores (spores of the white mold-causing pathogen released by apothecia). The Sporecaster app, developed by the University of Wisconsin-Madison, is a great tool to consult for risk of white mold development and to determine if spraying a foliar fungicide might be necessary. Should warmer, drier and sunnier weather return in the summer, it is possible that the period of senescing flowers and ascospore release will not coincide, or the flowering periods will be reduced before podding.

As shown in the Figure 1, growing a resistant hybrid or cultivar, could greatly reduce how much disease occurs in your crops. Be sure to consult your seed dealer for more information about your varieties.

Keep updated on surrounding states

Even if your fields did not have tar spot, white mold or other diseases in 2018, paying attention to what diseases are occurring in other states will be important in 2019.
Remember, pathogens can travel, predominantly via wind or storms. If a disease is prevalent in a neighboring state the amount of inoculum there will be high and could be a threat to Iowa depending on prevailing winds, and if the other two points of the triangle (host and environment) are conducive for disease development.

Crop scouting in 2019 will be more important than ever. Should you need to brush up on your disease ID knowledge or fungicide efficacy, there a plenty of resources available for you to consult. The Crop Protection Network has a wealth of free management guides that can be downloaded. This link will take you to a list of Iowa State Extension ad Outreach publications you can obtain. It may also be beneficial to ensure you’re up-to-date on fungicide efficacy, in the event that applying a fungicide is an effective management option. The Crop Protection Network also has this year’s fungicide efficacy guides for corn, soybean and seedling diseases for free download. You can also reach out to your local extension office and your area agronomists, should you need additional help.

Category: Plant Diseases

Links to this article are strongly encouraged, and this article may be republished without further permission if published as written and if credit is given to the author, Integrated Crop Management News, and Iowa State University Extension and Outreach. If this article is to be used in any other manner, permission from the author is required. This article was originally published on May 30, 2019. The information contained within may not be the most current and accurate depending on when it is accessed.

Crops:

Corn  Soybean

Tags: corn disease  soybean disease  iowa tar spot  white mold  disease triangle

Authors:
Dr. Alison Robertson is an associate professor of plant pathology and microbiology. She provides extension education on the diagnosis and management of corn and soybean diseases. Her research interests include Pythium seedling disease of corn and soybean and Goss's wilt. Dr. Robertson receiv...

Dr. Daren Mueller is an associate professor and extension plant pathologist at Iowa State University. He is also the coordinator of the Iowa State University Integrated Pest Management (IPM) program. Dr. Mueller earned his bachelor's degree from the Univ...

Ethan Stoetzer Communications Specialist II