



## Corn Tarspot in 2020

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Corn tarspot, caused by the obligate fungal pathogen *Phyllachora maydis*, caused significant losses for many producers in 2018. If you recall, that season was characterized by persistent wet weather from August through September in many parts of the Midwest. This environment favored a widespread outbreak of the fungus, with losses upwards of 60 bu/A reported in some areas. In 2019 and again in 2020, disease severity was only significant in isolated regions, and hot dry weather throughout much of the growing season impeded disease development to the degree that significant losses occurred in isolated areas that received more rain, or in some instances, where irrigation was practiced. However, the disease continues to spread and now can be found throughout the Midwest and recently was detected in Alberta, Canada, and an isolated county in Pennsylvania.

As the disease continues to increase in its range, so too will be the likelihood that the disease will be an issue somewhere in a given year. In many ways I think of this disease as similar to Fusarium head blight in wheat in many regards: 1) it likely will be widely established and overwinters in our area, providing local inoculum in a given year; 2) dispersal is local, but observations suggest spores may travel some distances to infect new fields and areas (i.e. it's a regional disease now); 3) disease is highly dependent on the environment, in particular temperature and humidity/rain (think 70s-80s and rainy). What have we learned about this disease and how to suppress it since the epidemic of 2018 and what should you keep in mind in 2021?

1. **It can overwinter as black stroma on corn residue.** Embedded to slightly raised, these melanized fungal structures can protect the fungus from environmental extremes. Spores of the fungus are produced and released under the appropriate environmental conditions. It is not known what factors instigate the initiation of an epidemic, as cool wet conditions that favor disease development frequently occur each Spring and Fall. If only wet weather and cool temperatures were needed, the fungus would release spores at a time where corn was not present in fields. There are likely other factors that influence dormancy of the fungus and factor into initiation of epidemics during the growing season. In addition, there could be other yet unobserved/studied hosts that can serve as sources of disease.

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2. **It is not grey leaf spot or northern corn leaf blight.** Although we have evidence that it overwinters on corn residue, it does not grow and feed on decaying corn residue. What was left on the surface the previous year serves as the local inoculum source the following year. Tillage and sizing residue can potentially help reduce local disease severity (for example, reducing surface residue from 90% to 15-20% via tillage reduced late season tar spot severity by approximately 3% in 2020 trials in Illinois); however, don't expect significant impacts under conditions highly favorable for tar spot.
3. **There are multiple ways it can spread into new fields and areas.** Local dispersal of the fungus from residue to nearby corn plants and fields is well documented. However, observations from 2019 and 2020 indicate that the relative distance spores can travel likely is much larger than the 75m presented in older literature. Movement also is possible in infested machinery as well as infested corn materials (i.e. bales, decorations, etc). The disease had been intercepted at ports of entry several times before 2015. It only takes a little infested material to establish the pathogen, though it may take several years for it to build to levels where it is noticeable.
4. No commercially available hybrids are resistant to tar spot (yet), but they do differ in susceptibility. Due to the limited range and limited severity until 2018, no hybrids currently on the market were purposely selected for characteristics that reduce tar spot. However, hybrids differ in susceptibility, likely due to chance selection of genetics. Many seed companies now have some idea of the relative susceptibility of their hybrids to tar spot, but realize that these are not immune or even highly resistant hybrids. They can potentially slow down disease progress and severity, thereby potentially resulting in better yields under highly favorable conditions. Better materials will be available over the next 5-6 years, but until then we need to work with what is available. No specific company or line appears to be better or worse for tar spot tolerant materials.
5. **There are many effective fungicides available, but timing is important.** Numerous products are available for suppressing tar spot. However, application of these products need to be made at disease onset, not days to weeks after the disease has developed in a field. To put it another way, revenge sprays will not help. Although data are still being generated on timings, the picture is starting to clear up, and making an application a little later in the VT-R3 window may be better for managing tar spot than the standard VT application in many instances. However, remember- there are other more widespread and equally as important diseases out there (i.e. grey leaf spot, northern corn leaf blight, Southern Rust). If those diseases are building or present at or before VT, delaying an application by a couple weeks can potentially cost you yield. As always, I recommend including an untreated strip or area in some fields to help you develop your own data and experience, which will assist you in future management decisions.
6. **Just because you saw it in a field does not mean it was the issue.** This season there were reports of fields at harvest producing half of the yields expected. Of course, at harvest the only thing you can see on plants are the black stroma from the tar spot pathogen. Just because the disease was present does not mean it limited yield, particularly if it developed late in the season as it did in most parts of Illinois in 2020. In order to make better determinations of the issues affecting your fields, you should be scouting at least every other week from V5-R5. I almost feel bad for how much tar spot was blamed for issues in 2020 where it simply showed up at the end of the season.