

## CORN DISEASE CHALLENGES OF 2018 – WHAT WE LEARNED AND DIDN'T LEARN

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The 2018 Wisconsin corn growing season was a challenging one when it comes to diseases. There were substantial disease epidemics across the entire corn belt of Wisconsin in 2018, with some fields hit by multiple diseases. Gray leaf spot started earlier than normal in the southwest portion of the corn growing region of Wisconsin. The emerging disease, tar spot, then moved in. Tar spot started in the south and southwest but moved north and east leaving many corn fields to dry down abnormally quick. Northern corn leaf blight also caused some issues in the central and northern corn production areas of the state. Then ear rots started to show up near harvest, with mycotoxin levels, like vomitoxin, being a significant issue in corn silage and some grain fields. To add insult to injury a new bacterial disease of corn was also reported for the first time in Wisconsin. Bacterial leaf streak, caused by a *Xanthomonas* sp., showed up in one field in Pierce Co., Wisconsin. Admittedly, the tar spot epidemic was probably the most impactful, followed by issues with ear rot and vomitoxin contamination.

Why were all of these issues so significant this year? It comes down to the disease triangle. Remember that the only way a plant disease can occur is if there is a susceptible host planted close to a virulent pathogen while the weather is conducive (e.g. plant disease = pathogen + host + conducive weather). We have a lot of corn planted (maybe with some susceptibility to some of these pathogens) in Wisconsin, and clearly we had virulent pathogen propagules around, it just took the weather to complete the triangle and we had the numerous epidemics of 2018. This scenario was especially true for tar spot. Cool, consistently wet and humid conditions at points in the season where corn was especially vulnerable left a lot of fields struggling to finish out the season. Throw in gray leaf spot and northern corn leaf blight and plants didn't have the leaf area to keep up with filling the ears to full size. Starving ears forced plants to scavenge carbohydrates from stalks, leaving stalks weak and vulnerable to rotting fungi. Ears that didn't fill to the tip with kernels, acted like little funnels to encourage water inside the husk, ear rots set in hard and heavy with fungi that can produce mycotoxins. It was really the perfect storm for corn in 2018.

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This presentation will focus on analyzing the 2018 season. We will tease apart the various issues and look ahead to 2019. Do we think that 2019 will be as bad as 2018? Unfortunately, we don't have a crystal ball to answer that question. However, we will provide some insight as to how we might prepare for these events should they occur in 2019. This might include: (1) looking for resistant hybrids for the major diseases you struggled with in your own operation; (2) thinking about tillage and planting strategies that reduce plant stress; (3) making the decision to spray fungicide and to detail fungicide application timing to maximize efficacy and return on investment.

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