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**Tar Spot Research Plots Assessed with GRYFN Drone Technology**  
*Research searches for tar spot resistance*

**WEST LAFAYETTE, IN (November 2, 2020)** – This fall, Purdue University Botany and Plant Pathology assistant professor Dr. Telenko partnered with West Lafayette-based GRYFN to analyze infected plants as part of the USDA-AFRI grant-funded Great Lakes Tar Spot Initiative. Corn tar spots cause blackish-brown spots or lesions on foliar tissue and have plagued Midwest farm fields again this year after the initial 2018 epidemic. Yield loss is associated with early, rapid senescence leading to a reduced ear size and poor kernel fill.

An emerging disease in corn, tar spot lesions are first found in the lower foliage and move up in the corn canopy and can infect the husk or any green tissue of corn. The disease is favored by wet weather and locations with moderate temperatures. Northern Indiana, with its lake effect weather, is a hot spot. “But we’ve continued to document additional counties in Indiana where it has spread. We will be adding ten new southern Indiana counties this year where we have identified it,” Dr. Telenko explained. “This is certainly expanding in range and fluctuating in severity. During conducive environmental conditions, tar spot can lead to a twenty to sixty-bushel loss.”

Working collaboratively with Michigan State University and the University of Wisconsin, germplasm with potential resistance to tar spot was planted in Purdue University test plots. Assessing the susceptibility of each set of genetics was done in a typical phenotyping methodology – by hand.

In addition to traditional hands-on evaluations, Dr. Telenko partnered with GRYFN, a multi-sensor drone technology company based in West Lafayette, to get a different evaluation of the test plots. GRYFN flew a corn breeding trial multiple times to collect billions of data points. The multi-sensor drone provides concurrent visual, hyperspectral, and laser sensing. These multiple outputs are combined for high throughput phenotyping, and ideally, insights not captured by the naked eye. The sensors’ collection information can be likened to an MRI for plants.

“We hope that GRYFN’s technology will allow us to identify tar spots earlier versus walking the field multiple times,” says Telenko. “Will the technology help identify plants that are more

susceptible or resistant? Understanding that data will help us continue to identify the germplasm that can be part of a breeding program for resistance to tar spot.”

“Ideally, if detection can be early enough to make a management decision, that’s a great thing,” Trent Lindenman, GRYFN COO added, “But, of even greater importance is identifying which traits are imparting resistance to tar spot and enabling breeders to make those selections now so that they will show up in commercial products down the road. That’s where we want to come in. We’re bringing the type of data and analytics that inform product selections.”

Dr. Telenko noted that GRYFN drones will enable the Initiative to analyze the disease, both temporally and geographically. “Ultimately, we want to determine a signature of the infection so we can make different decisions in the future.”

Analytic analysis from both the GRYFN technology and the in-field phenotyping is ongoing, with results and insights expected to be shared within the Tar Spot Initiative group in the coming months.

If you are a media partner and interested in learning more, please connect with us to schedule interviews or for additional images / information.

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Providing advanced multi-temporal, multi-sensor precision-image capture, processing and analysis platforms, GRYFN makes data-driven decisions possible. Multi-domain-specific experts deliver customized drone hardware, sensing software and consultative solutions to match your strategic needs. Visit <https://www.gryfn.io/> for more information.



Photo 1 caption: Purdue University Botany and Plant Pathology professor, Dr. Telenko partnered with GRYFN as part of the USDA-AFRI grant-funded Great Lakes Tar Spot Initiative.



Photo 2 caption: Tar spots of corn are commonly found in Northern Indiana since the initial outbreak in 2018. Photo source: Dr. Darcy Telenko, Purdue University.



Photo 3 caption: Common in corn, this disease can lead to a twenty to sixty-bushel loss for farmers. Photo source: Dr. Darcy Telenko, Purdue University.

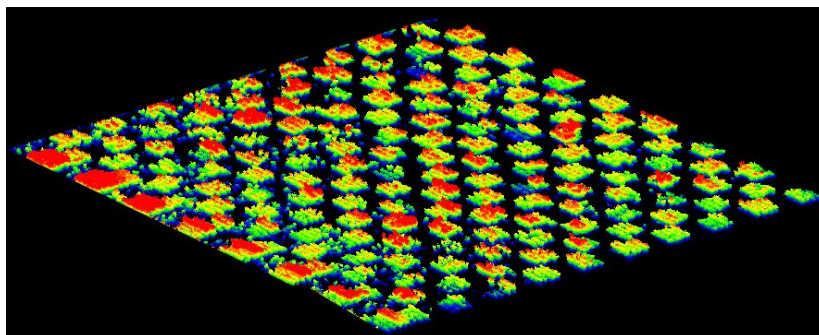


Photo 4 caption: A sample area of the study using a LiDAR (Light Detection and Ranging) sensor.

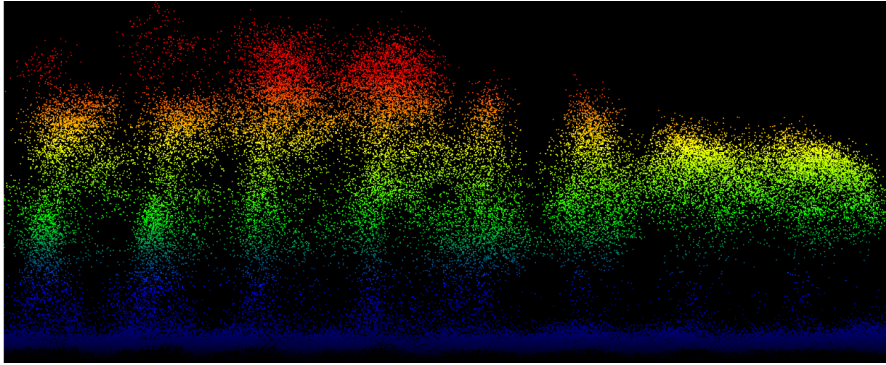


Photo 5 caption: A laser-based view of 4 corn varieties in the study. Each plot has two rows of identical genetics.