

# Is tar spot here to stay and how do I manage it?

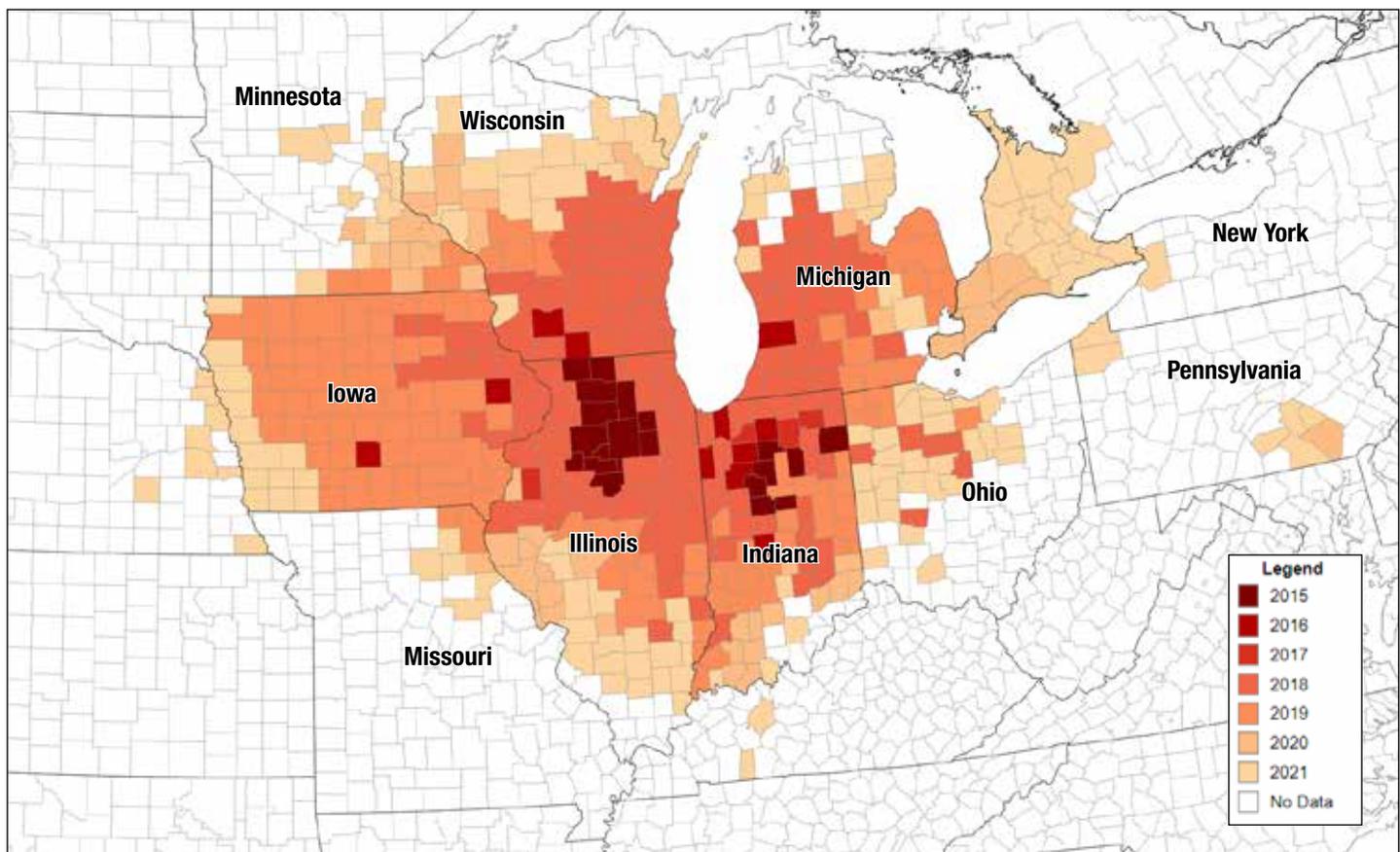
*Tar spot, a corn leaf disease that can cause significant yield losses, was first found in Ontario in 2020. It has since been found over a wider geographic area. Here's an overview of what is currently known about best management practices.*

## The simple answer

Tar spot is here to stay. In the U.S. corn belt, its prevalence has been increasing since 2015. In Ontario, tar spot went from being in only a few fields in five counties in 2020, to being found throughout 17 counties in 2021 (Figure 1).

A proactive management strategy involves early planting of a high yielding hybrid with tar spot tolerance (if known), scouting to identify early infection, using forecasting tools (e.g. Tarspotter app) to access disease risk (Figure 2) and the optimum time to apply an effective fungicide.

Current Ontario and U.S. data indicates that fungicides applied between tasseling (VT) and silking (R1) provide optimum control of tar spot when the risk of infection is high. Fortunately, this is also the optimum application timing for other common leaf diseases like northern corn leaf blight and Gibberella ear rot (DON).



**Figure 1.** Tar spot distribution in the U.S. Midwest and southern Ontario, 2015-2021.



**Figure 2.** A report of tar spot infection risk at various Ontario locations from the Tarspotter app. Infection risk is presented on a scale from “0” (low) to “100” (high). The Tarspotter app is available at Google Play and the Apple Store.

## A little more information

The inoculating spores of tar spot travel very long distances through the air – and this is the primary source of infection in Ontario fields. Spores overwinter on corn residue and can cause early infection of tar spot in Ontario. Plowing under corn residue and crop rotation may reduce spore levels in the field and delay infection due to airborne spores, but does not stop tar spot from developing.



**Figure 3.** Tar spot can appear as small, raised, black spots scattered across the upper and lower corn leaf surfaces.



**Figure 4.** Tan to brown lesions with dark borders surrounding dark fungal fruiting structures can also develop. These are commonly referred to as “fisheye” lesions.

Hybrid sensitivity along with high spore levels accompanied by wet and humid conditions can increase tar spot severity. Since there are no known tar spot resistant hybrids and evolving information on tolerant hybrids, selecting an effective fungicide and applying it at the right time is critical. Current studies indicate that fungicides with multiple modes of action are the most effective. Fungicides need to be applied prior or in early stages of the disease infection and may prevent infection for 2-3 weeks after application. Therefore, fungicides need to be applied when the risk of infection is high. The Tarspotter app is a useful tool for identifying when the risk of infection is considered high. Combining tolerant hybrids with effective, well-timed effective fungicides will provide the best management of tar spot.

## The full story

Since tar spot is a new disease, there is limited long-term, research-based information for disease management of tar spot in the U.S. Midwest and Ontario. OMAFRA and the University of Guelph (Ridgetown campus) are part of the Tar Spot Working Group. This group has been involved in several research trials focused on developing long-term and integrated strategies for tar spot management. Ontario trials have been established in farm fields having significant tar spot (>35% tar spot infection on the ear leaves).

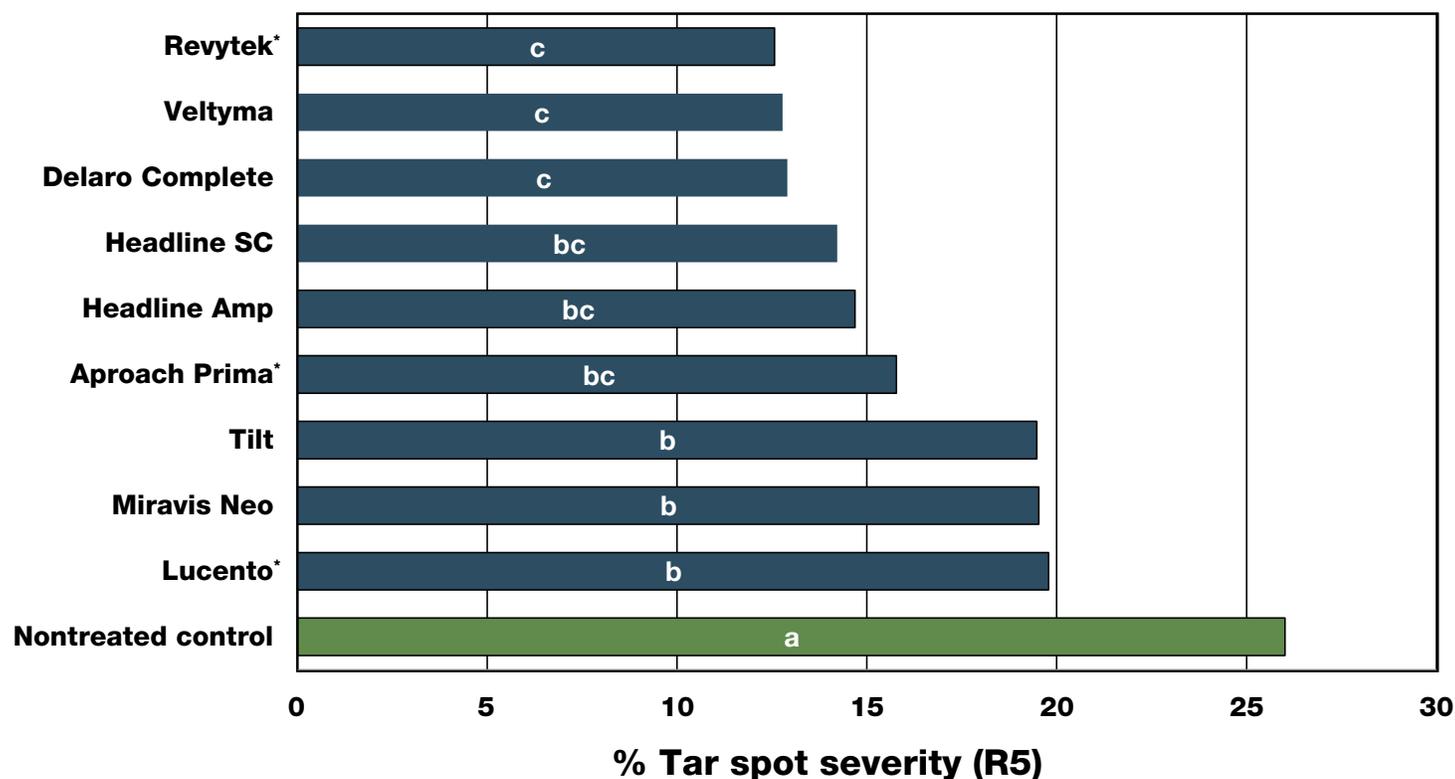
### Hybrid susceptibility to tar spot

Hybrid resistance to tar spot is a critical management tool. Collaboration with various corn seed companies began in 2021 to assist in evaluating the tolerance of commercial and experimental corn hybrids to tar spot. During the 2021 season, some hybrids showed good tolerance to tar spot in field sites at Dresden, Ridgetown, Rodney and Tilbury. Unfortunately, very few hybrids examined in Ontario would be considered highly tolerant to the disease. This finding is consistent with similar trials conducted in the U.S. Midwest.

### Effectiveness of fungicides

Thankfully, there are many registered products available to farmers that have demonstrated good tar spot control. A comparison of tar spot control from the application of various different fungicides was evaluated at Rodney, Ontario in 2021 (Table 1). All fungicides reduced tar spot severity and increased yield compared to the untreated control treatment (i.e. no fungicide). However, there were a group of fungicides that consistently reduced tar spot severity which led to higher yields in Ontario and U.S. trials. It is important to scout and understand your risk to other diseases and select a fungicide that is effective on the specific leaf diseases found in a field. An overview of fungicide efficacy on common corn leaf disease can be found in Table 2.

**Table 1. Tar spot severity following the application of nine different fungicides.**



\*Not available in Canada (Feb 2021)

Summary of efficacy data collected by the Tar Spot Working Group. Trial locations included in this data summary are from Ontario, Illinois, Indiana, Michigan, and Wisconsin. All five locations included the same 10 fungicide treatments and fungicide responses were very similar across all environments. Values with different letters are significantly different ( $\alpha=0.05$ ).

**Table 2. Fungicide efficacy for control of corn diseases, January 2022.**

The Corn Disease Working Group (CDWG) developed ratings for how well fungicides control major corn diseases in the U.S. and Canada. The CDWG determined efficacy ratings for each fungicide listed in the table by field testing the materials over multiple years and locations. The table is not intended to be a list of all labeled products. Additional fungicides are labeled for disease on corn.

Efficacy categories: NR=Not Recommended; P=Poor; F=Fair; G=Good; VG=Very Good; E=Excellent; NL=Not Labeled for use against this disease; U=Unknown efficacy or insufficient data to rank product

Class	Active ingredient	Product/Trade name (Canada) <sup>a-h</sup>	Anthracnose leaf blight	Common rust	Eyespot	Gray leaf spot	Northern corn leaf blight	Southern rust	Tar spot <sup>1</sup>
QoI Strobilurins Group 11	Pyraclostrobin	Headline EC/SC	VG	E	E	E	VG	VG	NL
	Picoxystrobin	Acapela Fungicide	VG	VG-E	VG	F-VG	VG	G	NL
DMI Triazoles Group 3	Propiconazole	Tilt 250E Multiple Generics	NL	VG	E	G	G	F	NL
	Prothioconazole	Proline 480 SC	U	VG	E	U	VG	G	NL
MIXED MODES OF ACTION	Benzovindiflupyr Azoxystrobin Propiconazole	7	U	U	U	E	VG	E	NL
		11							
		3							
	Mefentrifluconazole Pyraclostrobin	3	U	U	U	VG-E	E	VG	VG
		11							
	Prothioconazole Trifloxystrobin	3	VG	E	VG	E	VG	G-VG	NL
		11							
	Prothioconazole Trifloxystrobin Fluopyram	3	U	U	U	E	VG-E	G-VG	VG
		11							
		7							
	Pydiflumetofen Azoxystrobin Propiconazole	7	U	U	U	E	VG-E	VG	NL
		11							
		3							
	Pyraclostrobin Fluxapyroxad	11	U	VG	U	VG	VG-E	VG	NL
		7							
	Pyraclostrobin Metconazole	11	U	E	E	E	VG	G	NL
3									
Trifloxystrobin Prothioconazole	11	VG	E	VG	E	VG	G	NL	
	3								

<sup>1</sup> Fungicide application timing is extremely important and needs to be made near the onset of the tar spot symptoms. Efficacy ratings based on limited site locations from 2018 to 2021.

US Product/Tradenames may vary between Canada and the United States- <sup>a</sup>Headline 2.09 EC/SC, <sup>b</sup>Approach 2.08 SC, <sup>c</sup>Tilt 3.6 EC, <sup>d</sup>Trivapro A/B, <sup>e</sup> Delaro Complete 3.83 SC, <sup>f</sup>Miravis Neo 2.5 SE, <sup>g</sup>Priaxor 4.17SC, <sup>h</sup>Headline AMP 1.68 SC, <sup>i</sup>Stratego PRO 4.18 SC

This information is provided only as a guide. It is the applicator's legal responsibility to read and follow all current label directions. Reference to any specific commercial product is for general information only, and does not constitute an endorsement or recommendation by the CDWG. Individuals using such products assume responsibility for their use in accordance with current directions of the manufacturer. Members or participants in the CDWG assume no liability resulting from the use of these products.

**If you suspect tar spot, please contact OMAFRA field crop plant pathologist Albert Tenuta at [albert.tenuta@ontario.ca](mailto:albert.tenuta@ontario.ca).**