Regional approach to advance integrated management tools to minimize disease loss from tar spot on corn

A Data Management Plan created using DMP Assistant

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Funder: Ontario Agri-Food Innovation Alliance

Template: Ontario Agri-Food Innovation Alliance Template

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Project abstract:

Tar spot of corn is an emerging disease that has become an annual issue in the U.S and now in Ontario. Environmental conditions in Ontario during the 2021 growing season were ideal for tar spot, which resulted in many fields at epidemic-severity across southwestern Ontario, with losses of 10 to 40+ bu/ac. Currently, there is limited long-term research-based information for disease management of tar spot in the Midwest and Ontario. The proposed work will help to fill this gap and to provide a long-term IPM approach for sustainable/profitable corn production. In addition, this proposal also aims to utilize new advisory technology (Tarspotter app) and to identify effective, affordable, and environmentally sound strategies to maintain agricultural productivity and healthy communities.

Start date: 01-05-2023

End date: 30-04-2026

Last modified: 03-11-2023

Grant number / URL: UG-T1-2023-102258

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Data collection

Provide an overview of the data that will be generated, collected or acquired to support this project. If data will be acquired from a third party, specify the source.

The data collected during this project will consist of an evulation of hybrids for tarspot resistance, an evaluation of fungicides and application timings for controlling tarspot, an evaluation and validation of a prediction model for Ontario, and to evaluate other strategies for managing tarspot. The data produced will help to better understand the pathogen that causes tarspot.

What method(s) of data collection will be employed?

In-season crop/disease data will be collected mainly by MSc students, summer students, and research technicians (managed by the PIs). Weather data will be collected from nearby weather stations. Disease data will be collected by research-standard visible ratings. Yield data will be acquired through small-plot research equipment with sub-samples retrieved.

What types of data will be included?

Mainly numeric data, but some drone images/video footage will be taken.

What software or digital formats will be used to collect, manage and analyze the data?

Within the timeframe of the project, MS Excel will be used for data management. SAS for analysis. All numeric data will be archived in CSV format.

Provide an indication of the scope of the data?

The scope of the data will vary from year to year, depending on the incidence and severity of tarspot in Ontario.

Data storage

Estimate the size of data storage that will be required.

<1 GB would include all numeric data.

Where will your data be stored during the collection, collation and analysis phases of the project?

All data are stored on password-protected laptops, a second copy in OneDrive, and a third in DropBox.

What backup strategy will be employed?

All data are stored on password-protected laptops, a second copy in OneDrive, and a third in DropBox.

How will your data files be organized? What file naming conventions will you use? A brief overview or example would be adequate.

Folders will be created for each project objective and will contain data files in Excel. Files within each folder will be named to easily describe its contents with project name and date yyyymmdd.

What metadata will be developed for your data? Will there be supplemental documentation prepared to assist with the interpretation and analysis of your data?

The data will be organized with data records in the row, and data names as columns. The first row will contain an abbreviated heading of the data. A separate readme file will be constructed with definitions of all abbreviations and details for each column.

Data archiving and preservation

Will you deposit your data in the UG Agri-Environmental Research Data Repository or an external data repository? If you are opting to not archive your data in a repository, where will your data be housed after completion of your project?

The data will be archived in the UG Data Repository for long-term preservation.

Discuss any data transformations that will be needed so your data is preserved in appropriate, non-proprietary formats.

The data will be exported from Excel and preserved as plain text CSV files.

If some of your data will not be preserved, how long will you retain it? Will the non-preserved data be destroyed?

All data will be preserved indefinitely.

Sharing and reuse

Will the data that you archive in a data repository be made available for sharing and reuse by other researchers?

The data collected during the project will be open for sharing, but: i) pending the publication of anticipated major peer-reviewed papers that stem from the research, and ii) pending restrictions posed by companies that provide fungicides, especially fungicides that are experimental.

Explain which version of your data or subset of your data will be shared.

This will depend on the data requested (mainly whether the data have been published in intended peer-reviewed papers, or whether the data is restricted by companies that provide fungicides).

When will your data be available for discovery by other researchers? Will you impose an embargo on publication of your data? If so, please provide details on the duration of the embargo.

The data cannot be shared until after the study has been published, or approval by fungicide companies.

Will you limit who can access your data? If so, who will that be and why are you limiting the data's reuse?

The final data will be openly available, pending publication and company restrictions. The raw data may be provided to researchers who submit a request to the PI. Highly likely the request for raw data will be denied if the data until the data are published in a peer-reviewed journal. The request will be much more open for summarized data.

Are there specific license terms you will assign to users of your data?

The data will be licensed using the Creative Commons licensing information as appropriate based on the request for data.

Restrictions/limitations

Are there limitations or constraints on how you manage your data resulting from legal, ethical or intellectual property concerns?

Pending agreements with fungicide companies.

Would your data need to be anonymized or de-identified before being shared with others?

Some data may be confidential in its entirety, but may be made public with some de-identification before sharing. This will depend on the research agreements with the companies. The version of the data containing confidential information will be archived in a data repository but not available for sharing.

Confidential information

What information do you want to include in your DMP that should not be publicly shared?

All info may be shared publically following peer-review publication, fungicide company release, and pending requests to the PIs.