
FFTARI-2023-5- Enabling no-till corn and soybean production in high-residue environments via improved planter components

A Data Management Plan created using DMP Assistant

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Project abstract:

Three projects were recently conducted by OMAFRA staff, with support provided by Grain Farmers of Ontario and Soil and Crop Improvement Association, that evaluated various aspects of 4R nitrogen (N) management for corn production. Voluminous amounts of soil N, weather and corn yield data were collected (97 site-years), but not thoroughly analyzed. As such, important insights have not been discovered and mobilized. Thorough data analysis will be conducted on projects designed to assess: 1) weather and soil impacts on spring soil N mineralization and corn yield response to fertilizer N, 2) effects of soil sample storage and air drying temperature prior to sample extraction on soil nitrate and ammonium measurements and, 3) strategies to reduce volatilization from surface applied urea ammonium-nitrate (urease inhibitor, nozzle type, placement).

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Data collection

What types of data will you collect, create, link to, acquire and/or record as part of this project?

Overview of data:

This project will thoroughly analyze at least two-site years of data from field trials taking place at the Winchester and Ridgetown Research Stations in 2023. Data will consist of soil and crop variables collected from replicated trials investigating the effect of Susterre's Ultra High Pressure (UHP) planting equipment. It will primarily be numeric data.

Source of data: All data in this DMP will be generated by the project.

Data types and File Formats:

All research data is qualitative or quantitative and will be stored as csv files. Data will include soil structural properties (e.g. bulk density, porosity), crop measurements (yield, emergence rate, plant stand), and general site information (daily weather, soil fertility of the field the experiment is in).

All research data sheets (i.e. csv files) will have an associated meta-data file that defines each column headings and provides basic information for interpreting the column data (e.g. unit of measurement). This meta-data file is in .txt (text) file format.

Size of data:

Total size of data will be less than 100 Mb (csv and txt data files).

Storage Location and Backup:

Data will be stored on both a local drive (i.e. at the research stations at on computers located in offices of PIs and collaborators). IN addition, all data will be automatically backed to a networked storage folder (U of G OneDrive).

Once data is cleaned, it will also be uploded to the U of G Agri-environmental research data repository (Scholars Portal Dataverse).

Preservation

Where will you deposit your data for long-term preservation and access at the end of your research project?

Raw and processed data from this project will be deposited into the Agri-environmental Research Data Repository (<https://dataverse.scholarsportal.info/dataverse/ugardr>) along with relevant supplemental files through a facilitated deposit process managed by the University of Guelph Library. This (Dataverse) system, hosted in Canada on University of Toronto servers, is maintained and backed up by Scholars Portal according to high quality systems standards as part of a larger network of Canadian repositories. Each project is assigned a unique DOI (digital object identifier) which can be used in reporting, sharing, publishing and journal submissions to provide a permanent link to the location of the data. Data will be private until relevant publications in peer-reviewed journals are published, and then will be made public indefinitely. The only exception may be data related to the Moddus Plant Growth Regulator (manufactured by a project sponsor, Syngenta). Access to raw data related to Moddus PGR will be restricted to project sponsors.

Indicate how you will ensure your data is preservation ready. Consider preservation-friendly file formats, ensuring file integrity, anonymization and de-identification, inclusion of supporting documentation.

Most data will be uploaded .txt files (meta-data) or as .csv files (data files). PDF of soil reports (from an accredited soil lab) may be uploaded as well. The data will not need to be anonymized.

Restrictions

Are you aware of any current or future restrictions on the data used in and/or generated during this project?

Data will be uploaded to Borealis Dataverse after data cleaning.

However, sharing will be limited to project sponsors until relevant journal articles are published. After this, all data will be made public.

Sharing and Reuse

Will you make data from this project available for sharing?

Data generated from this trial will be made publicly available on the U of G Research Data Repository ([Borealis](#)) for an indefinite period after relevant publication of results in a peer-reviewed journal. Earlier than this, data summaries and basic data analyses will be provided to project sponsors via annual reports. Early access to data will be provided to all project sponsors (including OMAFRA collaborators) via written requests to project PI (Dr. Nasielski).

Project PI (Nasielski) has always uploaded data from completed projects to the B

If so, what data will you be sharing and in what form? (e.g. raw, processed, analyzed, final)

Raw data will be shared (.txt and .csv) along with (possibly) PDF of relevant reports.