

Smart Agriculture Research

2022 Summary: METOS® Canada Yield Prediction Model

Collect data for METOS® Canada to improve their yield calculator and develop a crop growth model for wheat. This includes data for weather, yield, crop staging, crop sampling and more.

INTRODUCTION

By using weather station data and field-specific information, METOS can predict crop yield. Detailed data was collected for METOS for development of a crop growth model. Accurate crop yield predictions can aid producers in making decisions such as estimating financials, planning storage needs and contracting grain in advance of harvest.

OBJECTIVES

- Collect and deliver data package to METOS Canada.

STUDY DETAILS

- 3 in-field weather stations installed at Steckler Farm on the Olds College Smart Farm, and 1 weather station on the edge of the field.
- Locations were selected within 3 different productivity zones of the field determined by historical NDVI, yield, etc.
- At each sampling location, there were 3 hail nets set up to enable sampling of undamaged plants in case of a hail storm.
- Regular crop staging.
- 5 major sampling events where researchers collected data for these parameters:
 - Soil samples
 - Biomass samples
 - Plant population counts
 - Nitrogen samples
 - Leaf Area Index (LAI)

RESULTS

The following data was provided to METOS Canada for development of their model:

- Detailed seed, fertility and pesticide application information.
- Field coverage maps.
- Yield maps and harvested field weight.
- Total # of samples:
 - 30 LAI measurements
 - 141 biomass samples
 - 141 plant population counts
 - 135 nitrogen samples
 - 120 soil samples (40 per 3 depths)
- Weekly crop staging records.
- Weather data:
 - Soil temperature, moisture and salinity
 - Wind speed and direction
 - Leaf wetness
 - Solar radiation
 - Precipitation
 - Temperature
 - Relative humidity
- Data from METOS CropView.
- Due to a minor hail event in August 2022, harvest samples were taken from regular sampling sites and beneath the hail nets.

FUTURE RESEARCH

The 2022 project is completed; possibilities for a future similar project are being explored.



Learn more at oldscollege.ca/SmartFarm