

The CropScan 3300H Grain Analyzer is an agricultural digital technology installed on an Olds College combine, and is capable of measuring protein and moisture content of harvested grain, oil seeds, and pulse crops in near-real time.

Olds College has been working with Farmers Edge to evaluate the technology, which could lead to producers being able to map geospatial crop information and improve field management.

Objectives

- Assess the relative accuracy of geospatial and near real-time protein measurements for barley and wheat.
- Explore the ability of the CropScan 3300H unit to measure the oil, protein and moisture content of canola.
- Quantify additional time impacts of on-combine grain analyzer operation.
- Identify areas of improved efficiencies resulting from use of on-combine grain analyzers.

Study Details

- In total, the CropScan was used on:
 - Wheat - 212 acres
 - Barley - 70 acres
 - Canola - 206 acres
- During operations, CropScan specific operational time and downtime was recorded in-cab.
- Observations regarding the equipment calibration process were documented.
- Preharvest and on-the-go harvest samples were collected to compare CropScan estimations to wet chemistry lab analysis.
- Maps generated by CropScan were included as additional field data layers to the Olds College HyperLayer Data Concept project.

Results

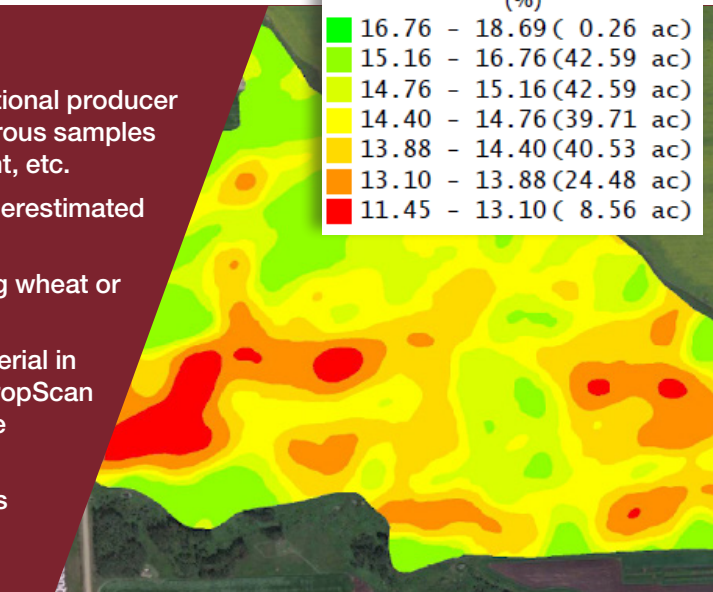
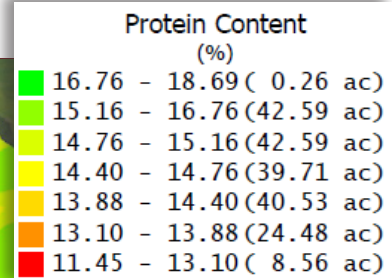
- The time and resources to calibrate CropScan is high for a conventional producer in Western Canada. Specifically the work required to source numerous samples of the same crop with varying levels of moisture, protein, oil content, etc.
- There was a common pattern identified where CropScan often underestimated protein of grain, while overestimating the moisture content.
- Use of CropScan caused no operational downtime while harvesting wheat or barley on the Smart Farm.
- During the harvest of straight-cut canola, excessive green leaf material in the sample would occasionally cause material to plug within the CropScan unit. When this happened, the operator had to stop and remove the blockage before continuing the harvest.
- The CropScan equipment did not alert operators when the unit was plugged; it was the responsibility of the operator to ensure new readings were being registered.

Three primary benefits as a result of using an on-combine grain analyzer:

1. Ability to segregate or blend commodities while harvesting to increase earnings of buyer premiums (high feed protein/low malting protein).
2. Traceability for inventory management of commodities as they are harvested.
3. Advanced nitrogen management through use of protein and yield maps in combination with soil nutrient analysis.

Future Research

In 2022, protein maps generated by CropScan in combination with harvest yield maps will be used to calculate Nitrogen-Balance maps for the VRT Nitrous Oxide Emission project.



Get more information at
www.oldscollege.ca/smartfarm.

