

Smart Agriculture Research

2023 Summary: Malt Barley Harvest & Drying Against Grain Quality & Accumulated Growing Degree Days

In 2023, malt barley grain samples were collected over a month-long period, dried down using low-temperature heat and sent to several labs for a variety of grading and quality tests. Statistical analysis identified relationships between harvested moisture content, test results and accumulated growing degree days.

INTRODUCTION

Olds College Centre for Innovation (OCCI) and Top Grade Ag have completed a fourth year of grain drying-related research together.

Areas of focus are continuations or follow-up investigations from previous projects conducted from 2020-2022. Local accumulated growing degree day values from weather stations can be used in the predictions of crop growth staging.

In 2022, OCCI worked with Top Grade Ag to determine if accumulated growing degree days could be an indicator to estimate harvest dates for spring wheat, with consideration for grain quality and optimal harvest timing. In 2023, a similar project was repeated using malt barley.

OBJECTIVES

- Evaluate effects on malt barley quality by harvesting at high moisture contents and drying with low-temperature heat.
- Identify if accumulated growing degree days can be used as an indicator to estimate harvest dates for malt barley.

RESULTS

- Germination 8 ml and water sensitivity measurements had the strongest correlations with initial moisture content.
- No other significant correlations were found between initial moisture content and test results.
- Correlations calculated between various accumulated growing degree day values and initial harvest moisture content had a strong negative correlation.
- Accumulated growing degree day values with a 10°C base had the strongest correlations of all bases and sources.

STUDY DETAILS

- Multiple barley grain samples were collected from Olds College Smart Farm Field 2W from Aug. 30 to Sept. 27, 2023.
- Harvested grain samples were weighed and initial moisture content recorded.
- Each sample was dried at 30°C until below 13.5% moisture.
- Samples were cleaned and sent to the Field Crop Development Centre (FCDC) for testing and grading factors, and SGS labs for vigor and germination testing with water sensitivity analysis.
- Accumulated growing degree day values collected from the Alberta Climate Information System (ACIS), Olds College Arable Mark 3 weather station, and the local Farmers Edge weather station from date of seeding (May 26, 2023).

FUTURE RESEARCH

Multiple future research opportunities have been identified from the findings of this project.

OCCI and Top-Grade Ag are establishing research priorities for the 2024 growing and harvest season.



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