

Wheat Grade and Quality Responses to Growing Season Weather Variation Across the Canadian Prairies



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Introduction

The crop growing region of western Canada is a vast region that experiences an enormous range of temperature and precipitation conditions each year. The spatial and temporal variability in growing conditions creates the potential for a wide range in wheat grade and quality. This variation makes it difficult to predict the grade and quality of wheat grown in western Canada each year. A quantitative investigation on the effects of growing season weather on wheat grade and quality must be first performed to derive wheat grade and quality predictions.

Objective

The purpose of this study is to establish and quantitatively measure a relationship between wheat grade and quality from producers' fields across western Canada to growing season weather

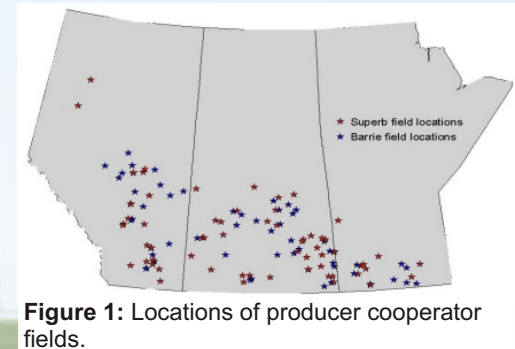


Figure 1: Locations of producer cooperator fields.

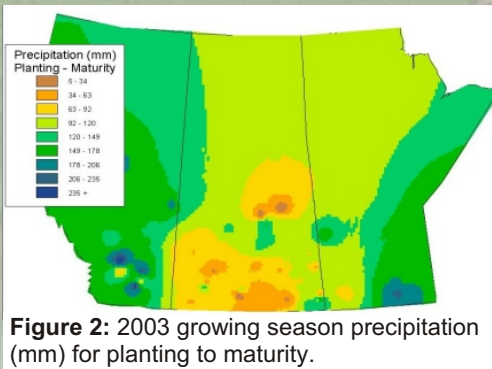


Figure 2: 2003 growing season precipitation (mm) for planting to maturity.

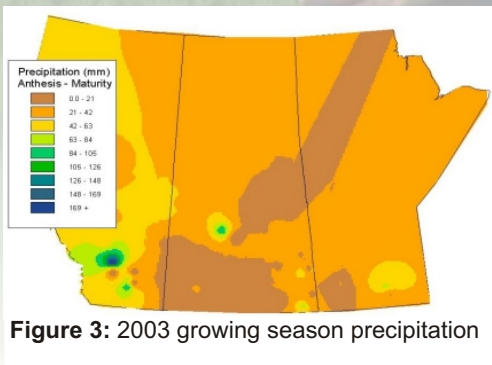


Figure 3: 2003 growing season precipitation

Materials and Methods

Field scale trials were organized with grower cooperators across western Canada. One hundred and twenty producers spatially distributed across the Canadian prairies were solicited to participate in this project (Figure 1). Each field needed to meet specific criteria to be included in the project. Each field to be studied needed to be sown with either certified AC Barrie or certified Superb CWRS wheat seed. A soil test analysis was also needed to be available from the field for nutrient availability information. Each field had a spring soil moisture depth measurement taken at seeding. A rain gauge was then set up at each field for daily precipitation recordings. Daily maximum and minimum temperatures were interpolated from neighbouring Environment Canada weather stations. At the end of the season, growers sent in a 5 kg sample of harvested wheat for analysis of wheat grade and quality. End-use quality will be investigated by submitting the wheat to a variety of dough and flour property tests.

Results and Discussion

Producers' wheat fields in western Canada experienced a wide range of growing season weather conditions. The amount of precipitation wheat fields received varied across the prairies. Growing season precipitation varied from 3.74 mm to 266.20 mm (Figure 2). As the season progressed into July and August there was a very limited amount of precipitation in western Canada. Precipitation during the period of 50% anthesis to maturity varied from 0 mm to 104.90 mm (Figure 3).

This project is developing as grain samples are analyzed for end-use quality. Predictions for the relationship between growing season weather and wheat grade and quality will be investigated as the data is generated.

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