

Plant Growth Regulator Trial

Manipulator™ 620 application on spring wheat (Two Hills No.21)

This trial was conducted with the agronomic support of Christine Suominen at Richardson Lamont

Closest Town: Willingdon, Alberta

Soil type: Orthic Black Chernozem on coarse textured materials over medium or fine textured till

Seeding Date: May 15, 2022

Harvest Date: September 10, 2022

Row Spacing: 10" (25.5 cm)

Variety(s): AAC Wheatland VB

Reps: Five

Previous Crop: Canola

Tillage: Harrowed in the fall

Herbicides: **Pre:** Priority® + Glyphosate

In-Crop: Everest® + Pixxaro™

Seed Treatment: None

Foliar Insecticides: None

Foliar Fungicides: Sphaerex™

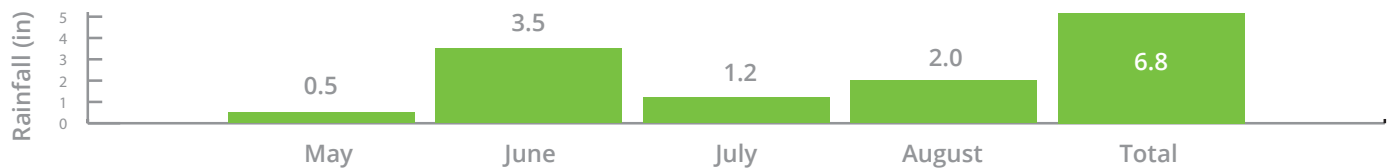
Fertilizer:

90N-30P-10K-0S

Irrigation: None

Rainfall:

Rainfall (in) at trial location from May through August, 2022



Introduction

Partnering with Porozni Farms in Willingdon, Alberta, this trial compared plant growth regulator Manipulator application on the CWRS variety AAC Wheatland VB. The trial was seeded using a Bourgault seeding with 10" (25.5 cm) row spacings and 2" openers. Manipulator plant growth regulator applied GS 31 using a 120 ft sprayer at 10gal/ac water volume. Treatments were replicated and randomized.

Treatments

Trial design goal:

To determine the yield and grain quality impacts of plant growth regulator Manipulator application on yield and quality of spring wheat production.

Treatment 1: Check

Treatment 2: Manipulator™ 620 applied at GS31-32 @ 0.7L/ac

Results

In-crop assessment results

Imagery collected by drone indicated visual lodging differences between treatments. Treatment areas were determined (Figure 1) with 2.5 m buffers on either side of the treatment areas to avoid inclusion of sprayer tracks in the visual lodging assessment. Through computer analysis conducted by Olds College, treatment areas were assessed for total and percent lodging within treatment areas. Lodging was categorized as 'major' or 'minor' (Figure 2). Major lodging included lodging where the crop was clearly laying horizontal. Minor lodging includes any visual lodging other than major lodging. Application of Manipulator™ 620 significantly impacted all lodging factors assessed (Figure 3 & 4) by decreasing the amount of major and minor lodging areas.

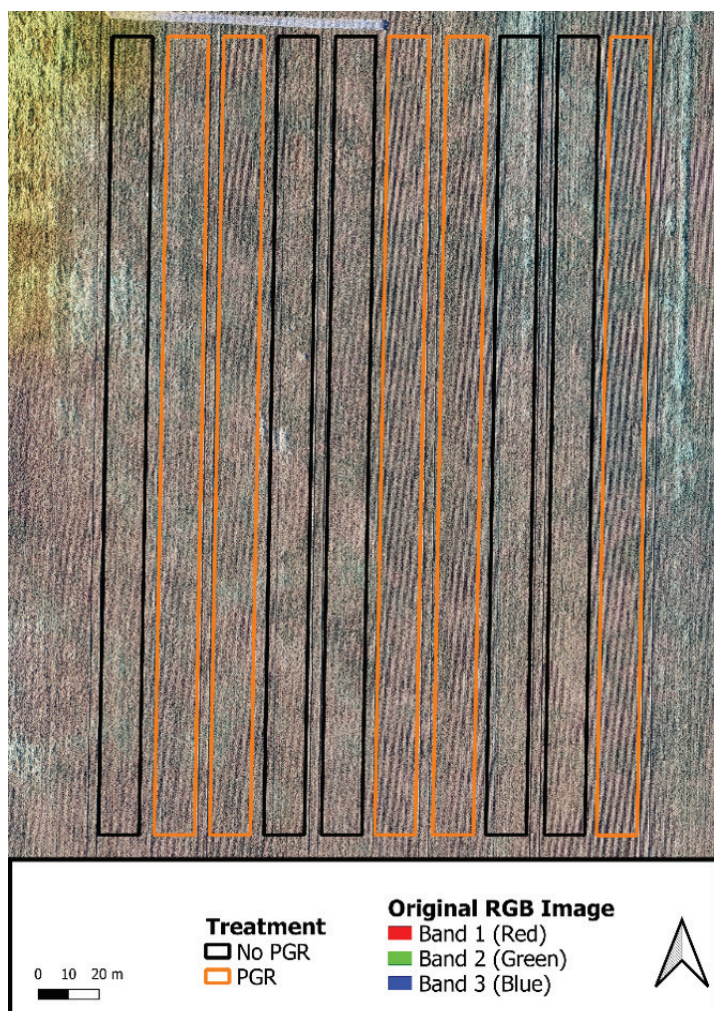


Figure 1: Drone imagery of trial area with treatment areas outlined.

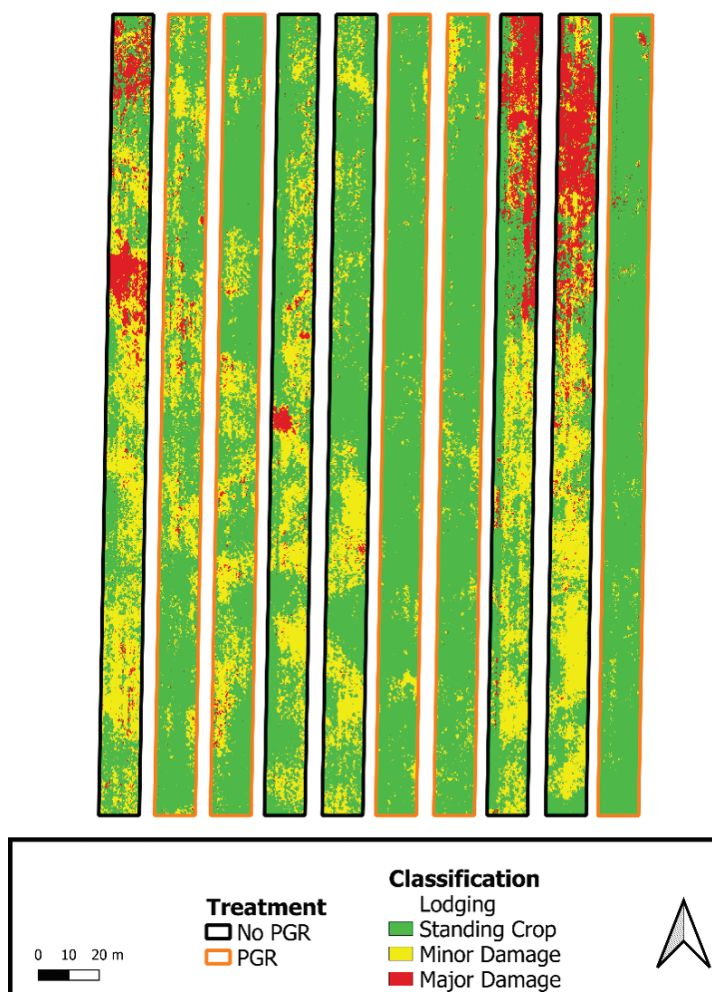


Figure 2: Drone imagery of trial area with treatment areas outlined and visual differentiation between standing, minor lodged and major lodged crop.

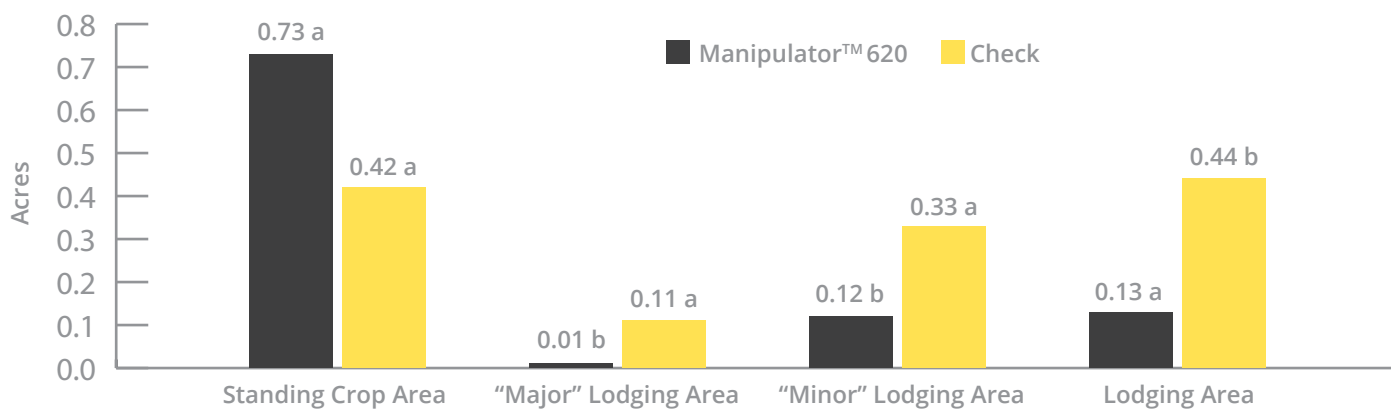


Figure 3: Impact of application of Manipulator™ 620 on various lodging characteristics, in acres, on AAC Wheatland in Willingdon, Alberta

Values with alphabetical value that differ within each lodging characteristic indicate significant difference $p < 0.05$

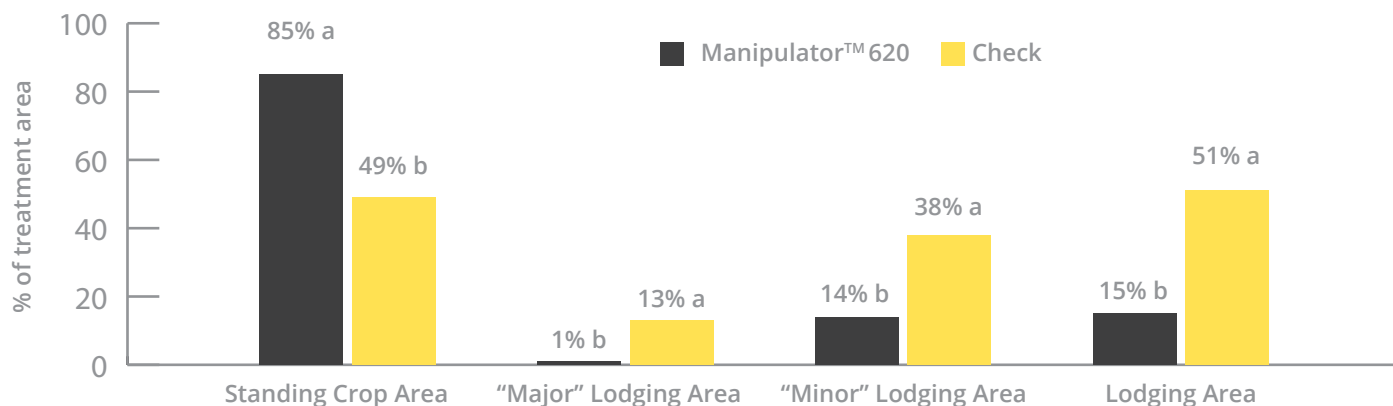


Figure 4: Impact of application of Manipulator™ 620 on various lodging characteristics, in percentage of treatment area, on AAC Wheatland in Willingdon, Alberta

Bars with alphabetical value that differ within each lodging characteristic indicate significant difference $p < 0.05$

Yield results

Yield results were not significant based on $P < 0.05$. However, statistical analysis indicates the results are close to significant ($P = 0.0597$).

Table 1: Yield, and quality results comparing Manipulator™ 620 to an untreated check on the Canada Western Red Spring (CWRS) variety AAC Wheatland VB in Willingdon, Alberta, 2022.

Treatment	Yield at 14.5% seed moisture content (bu ac ⁻¹)	Protein (%)	Test Weight (lb/bu)
Check	90.0 a	15.3 a	67.1 a
Manipulator™ 620	94.8 a	15.1 a	67.1 a
<i>p</i> -value	0.0597	0.0608	0.208
CV%	4.22%	2.42%	0.18%

Values with the same letter are not significantly different. Significant difference if $p \leq 0.05$.

Grain quality results

No significant differences in grain quality were seen between treatments.

Economics

No significant differences were seen between treatments. Therefore, when only considering yield, the most economical treatment is the check. However, the difference of yield between treatments was close to significant. Additionally, the economic implications of combine fuel required to harvest lodged crops was not calculated. Considering the check treatment has significantly higher lodging (Figure 3 & 4), it could be assumed that these treatments would require more fuel and time to harvest.



Summary

Application of Manipulator™ 620 on AAC Wheatland VB resulted in no significant difference in yield (just barely). However, application of Manipulator™ 620 resulted in significant changes in minor and major lodging percentage. Equipment operation also indicated increased challenges during harvest of the check treatments compared to the Manipulator™ 620 treatment. This indicates there could be an economic savings of time and fuel on the Manipulator™ 620 treatment.