Plot2 Farm

2025

# Plot2Farm
## TRIALS AND RESULTS

An on-farm research trial program supported by Alberta Grains

Alberta Grains

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# Special thanks

*The success of the Plot2Farm program is due to the contributions from many parties. Without these groups, this year's trials would not have been a success. A special thanks to:*

***Farm cooperators:***

- **Bruce Farms Ltd, Strathmore**
- **Drift Fence Farming Co Ltd, Arrowwood**
- **Fairville Farming Co Ltd, Bassano**
- **Goldridge Farming Co Ltd, Turin**
- **Great West Farms Ltd, Nisku**
- **Mullen Farms Ltd, Strathmore**
- **RTA Farms Ltd, Brownvale**
- **Schultz Holdings Ltd, Standard**
- **Silverwood Ventures, Claresholm**
- **Triple H Farms Ltd, Carstairs**

***Supporting agronomists:***

- **Rob Dunn, FarmWise Inc**
- **Matt Gosling, Premium Ag**
- **Andrew Clements, Premium Ag**
- **Ashley Wagenaar, Farming Smarter**
- **Corny VanDasselaar, Cormova Ag**
- **Megan Wong, North Peace Applied Research Association**
- **Rachelle Farrell, Croptimistic Technology**
- **Rebecca Wiebe, Core Ag Inputs Carstairs**

***As well as:***

- **SGS**
- **Print Three Calgary**

# Statistical phrases for reference

1. **Statistical Significance:** means that the difference between two or more sets of data is not likely due to random chance and due to a specific treatment. In simpler terms, if something is statistically different, it means that there's a strong reason to believe that the difference is real and meaningful and due to treatments applied.
2. **The difference is not statistical:** means that the difference between two or more sets of data is likely due to random chance rather than a real, meaningful difference. In simpler terms, if something is non-statistically different, it suggests that the observed differences could just be a coincidence or fluke.
3. **p-value:** This is a measure used to determine the significance of results. A low p-value (< 0.05) usually indicates that the results are statistically significant.
4. **CV% (Coefficient of Variation):** This is a way to show how much the numbers in a group differ from each other, expressed as a percentage. In simpler terms, it helps you understand how "spread out" the data is. A higher CV% means the data points are more spread out, and a lower CV% means they are closer together.
5. **Replicate Treatments:** This means conducting the same experiment treatments multiple times in the same location to ensure the results are reliable. Replication helps confirm that an observed effect is consistent and not just a one-time occurrence.
6. **Significant Differences:** This phrase is used to indicate whether the differences between treatments are statistically meaningful. It is often accompanied by p-values.
7. **Randomized:** Randomly assigning treatments to different areas within each replication. The goal is to eliminate bias and make sure the results are generalizable. It's like shuffling a deck of cards to ensure a fair game.
8. **Values with the same letter are not significantly different:** In tables, you might see values followed by letters like 'a' or 'b.' If two values have the same letter in the same column, it means that statistically, they aren't different enough to be considered separate results.
9. **Trends:** Refers to observable patterns in the data that may not be statistically significant but are worth noting.
10. **Yield adjusted to X% seed moisture content:** This is a specific measure of yield that accounts for the moisture content of the seed. It is used for more accurate comparisons (14.5% for wheat and barley).
11. **Non-statistically significant trends:** This phrase indicates that while there's a noticeable pattern in the data, it's not strong enough to be considered statistically valid. It's like saying there seems to be a relationship between two things, but we can't be sure without more evidence.

# Considerations

Although the Plot2Farm trials are conducted using science-based and statistically focused methods, they are conducted in a single location under specific farm, management and weather conditions. It's important to note that results may vary based on different environmental conditions, management practices, and genetic factors. Farm scale trials, as they stand, do not replace small plot research results. Rather, they add further context to the information. Producers should consider farm-scale research findings as one piece of a larger puzzle. While the data provides valuable insights, it should be combined with other research and tailored advice to make well-informed decisions for your specific farm conditions.

# Biological Trial

## Assessing the benefits for a dry humic product on barley yield and quality (Arrowwood)

This trial was conducted with the agronomic support of Matt Gosling at Premium Ag

**Closest Town:** Arrowwood, AB
**Soil zone:** Dark Brown
**Seeding Date:** May 17 to 20, 2025
**Row Spacing:** 10" (25.4 cm)
**Variety(s):** AB Prime
**Reps:** Three
**Previous Crop:** Canola
**Tillage:** N/A

**Herbicides**
**Fall Burn-off**: no • **Pre-Seed:** Korex + Glyphosate • **In-Crop:** Rezuvant XL + MCPA
**Seed Treatment:** Raxil, Activ Prime
**Foliar Insecticides:** N/A
**Foliar Fungicides:** N/A
**Fertilizer**: see below
**Irrigation:** No

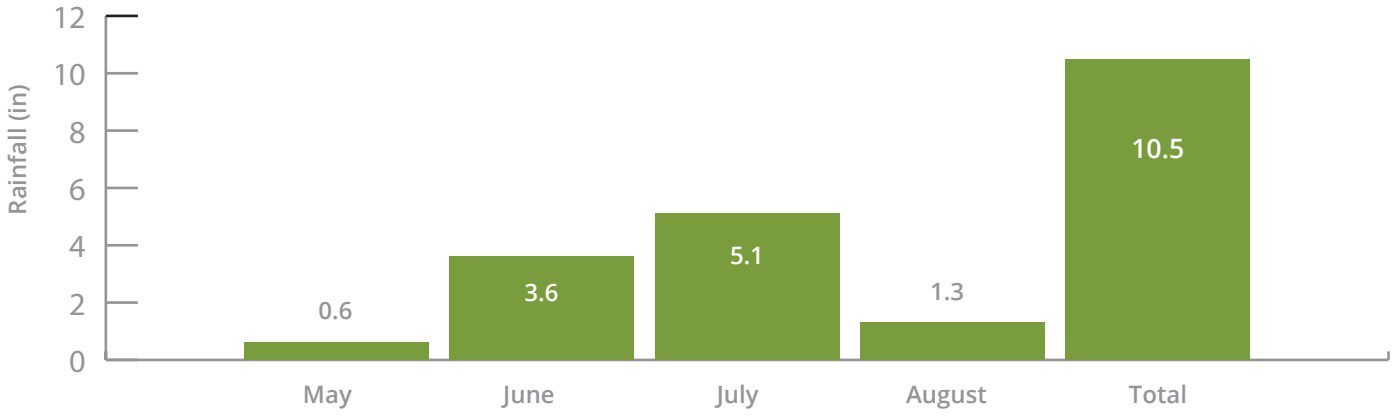
**Soil test results (by zone)**

| Nutrient | lbs/ac nutrient | Sample depth (inches) |
|---|---|---|
| $NO_3$-N | 28-32 | 24 |
| P | 46 - 52 | 6 |
| K | 480 - 680 | 6 |
| $SO_4$-S | 36-48 | 24 |
| % SOM | 3.7 - 5.6 | 6 |
| pH | 6.8 - 7.3 | 6 |

**Fertilizer Information**

| Blend or product applied | Variable Rate (lbs/ac of product) | Timing and Placement |
|---|---|---|
| Urea (Variable Rate) | 160 - 230 | broadcast |
| Urea/MAP/KCl (8-38-16) Variable Rate | 80-110 | side band |
| Dry humic product | 15 | seed placed |

**Rainfall (in) at trial location from May through August, 2025**



## Introduction

Partnering with Drift Fence Farming Co Ltd at Arrowwood, AB, this trial assessed the impact of a dry humic product on AB Prime barley yield and quality. The trial was seeded at a target plant population of 29 plants/ft² using a New Holland air drill with 10" row spacing. The dry humic product was seed-placed and treatments were replicated and randomized.

## Treatments

### *Trial design goal*

To determine the impacts of a seed-placed dry humic acid product on yield and quality of AB Prime barley.

**Treatment 1:** dry humic acid product seed placed at 15 lbs/ac

**Treatment 2:** Check

## Results

### *In-crop assessment results*

Average plant stand density was 30/ft² for the humic treated and 28/ft² for the check area (target was 29/ft²).

### *Yield and grain quality results*

Application of a dry humic acid product had no effect on yield or grain quality for AB Prime barley (Table 1).

***Table 1:*** Plant stand counts, yield, and quality for AB Prime barley when treated with a dry humic acid product at Arrowwood, Alberta, 2025.

| Treatment | Actual Plant (density/ft²) | | Yield (bu/ac) | | Protein (%) | | Bushel Weight (lbs/bu) | |
|---|---|---|---|---|---|---|---|---|
| **Treated (dry humic)** | 30 | a | 47 | a | 12.1 | a | 53.3 | a |
| **Check** | 28 | a | 48 | a | 12.0 | a | 53.8 | a |
| | | | | | | | | |
| ***p-value*** | 0.0818 | NS | 0.1362 | NS | 0.5404 | NS | 0.3468 | NS |
| **CV %** | 2.17% | | 1.58% | | 1.48% | | 1.00% | |

*Values with the same letter within a column are not significantly different. Significant difference if p≤0.05.*

## Summary

Applying a dry humic acid product to AB Prime barley at Arrowwood, AB had no effect on yield or grain quality.

# Plant Growth Regulator Trial

## Assessing plant growth regulator on irrigated barley yield and quality (Turin)

This trial was conducted with the agronomic support of Corny VanDasselaar at Cormova Holdings

**Closest Town:** Turin, AB
**Soil Zone:** Brown
**Seeding Date:** May 8, 2025
**Row Spacing:** 10" (25.4 cm)
**Variety(s):** Esma
**Reps:** Four
**Previous Crop:** Silage Corn

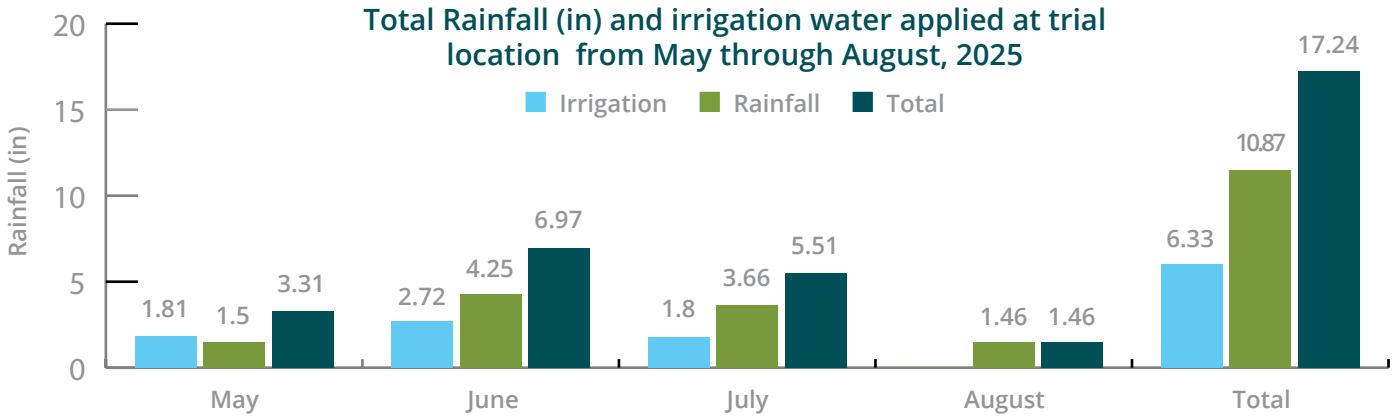
**Tillage:** Fall deep Rip and cultivate
**Herbicides:** **Fall Burn-off:** N/A • Pre-Crop: Blackhawk EVO + glyhosate • **In-Crop:** Oxbow • **Pre-harvest:** Round-up
**Seed Treatment:** Terraxa F4
**Foliar Insecticides:** N/A
**Foliar Fungicides:** Miravis Neo
**Irrigation:** Yes

**Soil test results**

| Nutrient | lbs/ac nutrient | Sample depth (inches) |
|---|---|---|
| $NO_3$-N | 199 | 12 |
| P | 101 | 6 |
| K | 519 | 6 |
| $SO_4$-S | 312 | 12 |
| % SOM | 2.8 | 6 |
| pH | 7 | 6 |

**Fertilizer Information**

| Product applied | Rate (lbs/ac nutrient) | Timing and Placement |
|---|---|---|
| Urea | 74 | mid-row |
| MAP | 58 | seed placed |
| kinetic Boron (ATP) | .3 L/ac with herbicide/fungicide | sprayed |




## Introduction

Partnering with Goldridge Farming Co Ltd at Turin, AB, this trial assessed the impact of a PGR on yield and quality for Esma barley for a field with very high residual nutrients, having been manured in the past 2 years. The trial was seeded at a target plant stand of 27 plants/ft$^2$using a Bourgault hoe drill with 10" row spacing and 3/4" openers. Moddus® plant growth regulator was applied at GS 32 at 10gal/ac water volume. Treatments were replicated and randomized. Lodging effects were analyzed from high-quality drone imagery collected at mid-dough stage or later.

## Treatments

*Trial design goal:*
To determine the yield and quality impacts of Moddus® plant growth regulator (PGR) on yield and quality for irrigated Esma barley.

**Treatment 1:** Moddus® applied at GS 32 @ 0.42L/ac

**Treatment 2:** Untreated Check

## Results

*In-crop assessment results*
Average plant stand density for the trial site was 27 plants/ $ft^2$ (same as target).

*Yield and grain quality results*
Application of Moddus® had no effect on yield or quality parameters for Esma barley.

***Table 1:*** Yield and quality results comparing Moddus® PGR to an untreated check on irrigated Esma barley at Turin, Alberta, 2025.

| Treatment | Yield (bu/ac) | | Protein (%) | | Bushel Weight (lbs/bu) | |
|---|---|---|---|---|---|---|
| **PGR (Moddus)** | 158 | a | 14.0 | a | 48.3 | a |
| **Untreated check** | 155 | a | 13.5 | a | 47.8 | a |
| | | | | | | |
| ***p-value*** | 0.5725 | NS | 0.2733 | NS | 0.5488 | NS |
| **CV %** | 1.58% | | 1.48% | | 1.00% | |

*Values with the same letter within a column are not significantly different. Significant difference if p≤0.05.*

*Drone imagery analysis results*
Dr. Felippe Karp, Instructor and Researcher at Olds College did a thorough analysis of high-resolution drone imagery captured just before harvest, comparing the extent and degree of lodging between side-by-side PGR and check plots. Figures 1 and 2 show the treatment effect and lodging classification for the site. Lodging pressure was severe at this site (92% in the check areas) and the application of Moddus PGR had no effect on the extent of lodging. Under these extreme conditions (high fertility, irrigation and other environmental factors like the timing of wind driven rainfall), the ability of the crop to withstand lodging was likely overwhelmed regardless of the treatment, even though Esma barley is rated as "Very Good" for lodging resistance.

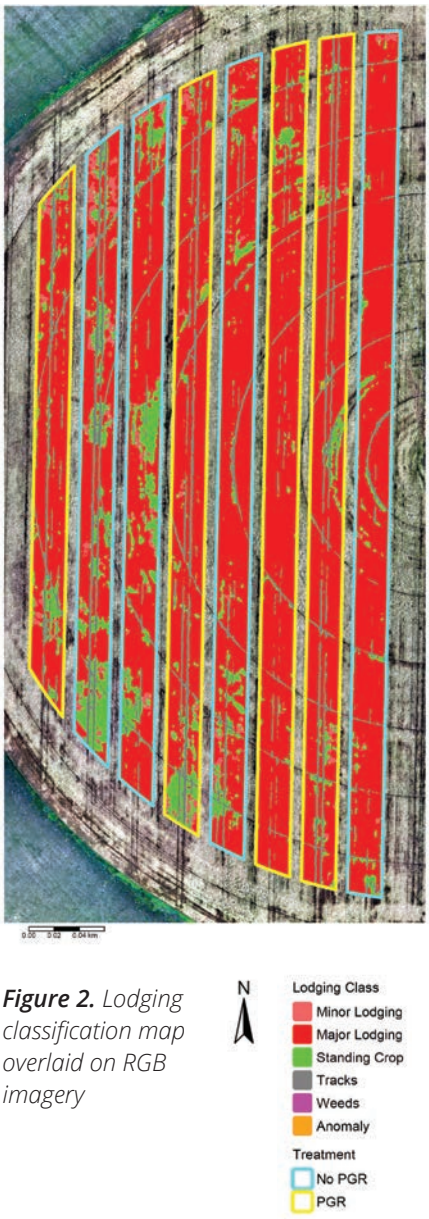



***Figure 2.*** *Lodging classification map overlaid on RGB imagery*

## Summary

Application of Moddus® had no impact on yield and quality parameters for Esma barley at this irrigated, high fertility site. Small plot research conducted in Alberta indicated that the benefit of a PGR application is more likely to occur where conditions are more conducive to high lodging risk (Strydhorst, Hall, & Perrott, 2018), although this site had such high lodging pressure that it was unlikely that a PGR application could have shown any benefit.

**References**

*Strydhorst, S., Hall, L., & Perrott, L. (2018). Plant growth regulators: What agronomists need to know. Crops & Soils, 51(6), 22-26.*

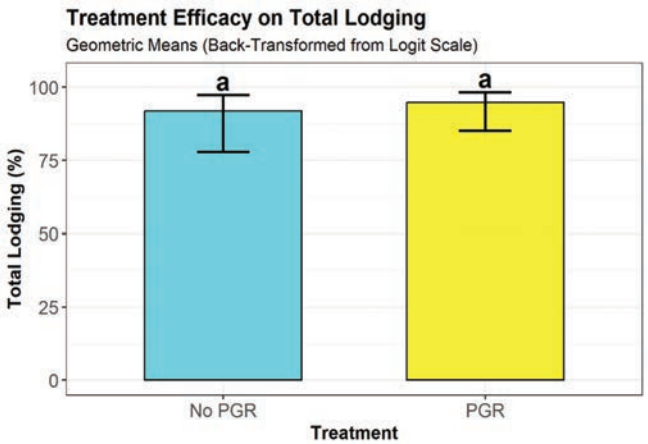



***Figure 1.*** *PGR Treatment Effect on Total Lodging (Model Estimates)*

# Seeding Rate Trial

## Comparing the effect of seeding rate on barley yield and quality (Nisku)

This trial was conducted with the agronomic support of Rachelle Farrell at Croptimistic Technology

**Closest Town:** Nisku, AB
**Soil type:** Black
**Seeding Date:** May 23, 2025
**Row Spacing:** 10" (25.4cm)
**Variety(s):** CDC Churchill

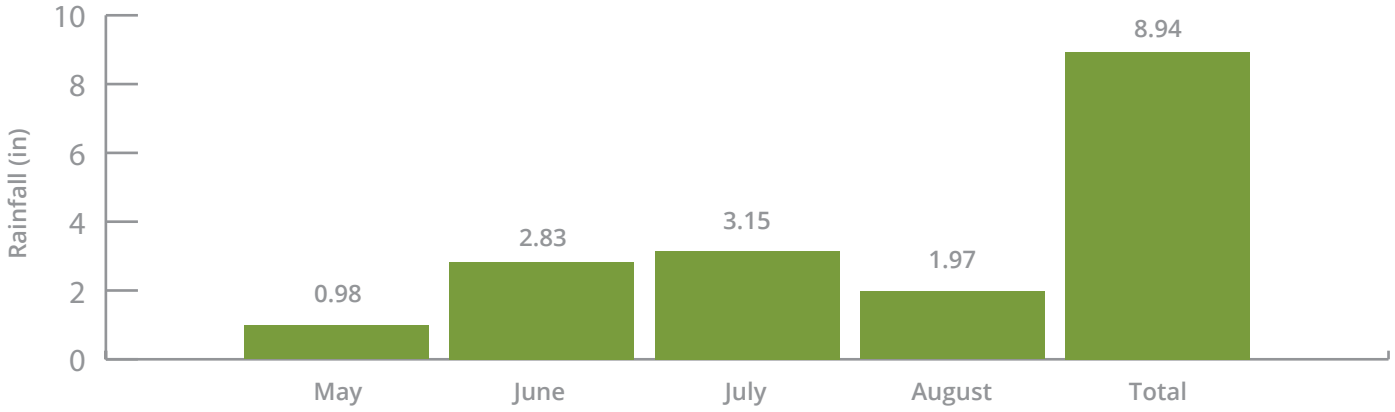
**Reps:** Three
**Previous Crop:** Canola
**Tillage:** Fall speed tillage
**Herbicides:** Fall Burn-off: N/A • Pre-Crop: Blitz • In-Crop: Axial Maxx, Axial BIA, Heat LQ + Glyphosate

**Seed Treatment:** fungicide seed treatment
**Foliar Insecticides:** N/A
**Foliar Fungicides:** Nexicor
**Irrigation:** No

**Fertilizer Information**

| Product applied | Rate (lbs/ac of product) | Timing and Placement |
|---|---|---|
| Urea | 120 | Side band at seeding |
| MAP | 67 | Side band at seeding |
| Potash | 63 | Side band at seeding |

**Rainfall (in) at trial location from May through August, 2025**




## Introduction

Partnering with Great West Farms at Nisku, Alberta, this trial compared four different seeding rates on the barley variety CDC Churchill. The trial was seeded using a John Deere 1910 air drill with 10" row spacing and 4" openers. Seeding rates to target plant stand treatments were determined using thousand kernel weight (41.3g), germination percentage (95%), and farm-specific emergence mortality estimates (10%). Seeding rates to attain target plant densities of 27.5 (average variable rate), 22 (low rate), 27.5 (medium rate) and 33 plants/ft² (high rate) were 127.5, 102, 127.5, and 153 lbs/ac, respectively. Treatments were replicated but not randomized.

## Treatments

*Trial design goal*

Determine the yield and grain quality impacts of seeding rates on CDC Churchill barely.

**Treatment 1:** Low-Rate (target 22 plants/ft²)

**Treatment 2:** Medium Rate (target 27.5 plants/ft²)

**Treatment 3:** High-Rate (target 33 plants/ft²)

**Treatment 4:** Variable-Rate (average of 27.5 plants/ft²)

## Results

*In-crop assessment results*

Measured crop densities 26 days after planting were 16, 19 and 25 plants/ft² for the low, medium and high rate treatments, with the variable rate also at 19/ft². Differences for the 3 densities achieved were statistically significant.

*Yield and grain quality results*

While there were no statistical differences due to treatment variability, mean yields were about 7% higher for the medium, variable and high compared to the low seeding rate treatment. Seeding rates had no effect on barley grain quality parameters.

***Table 1:*** Plant stand, yield and quality with low, medium, high and variable seeding rates for CDC Churchill barley at Nisku, Alberta, 2025.

| **Target plant density (plants/ft²)** | **Actual Plant** (density/ft²) | | **Yield** (bu/ac) | | **Protein** (%) | | **Bushel Weight** (lbs/bu) | |
|---|---|---|---|---|---|---|---|---|
| **Low (22/ft²)** | 16 | c | 95 | a | 10.5 | a | 53.5 | a |
| **Medium (27.5/ft²)** | 19 | b | 103 | a | 10.6 | a | 53.3 | a |
| **High (33/ft²)** | 25 | a | 103 | a | 10.2 | a | 52.8 | a |
| **Variable (27.5/ft²))** | 19 | b | 102 | a | 10.4 | a | 53.1 | a |
| | | | | | | | | |
| ***p-value*** | <0.0001 | * | 0.2232 | NS | 0.3291 | NS | 0.2992 | NS |
| **CV %** | 16.99% | | 6.38% | | 3.68% | | 0.98% | |

*Values with the same letter within a column are not significantly different. Significant difference if p≤0.05.*

## Summary

Although plant stand counts were lower than targets, as-applied seeding rates and background information from the agronomist showed that plant stands were adequate for the site conditions. Overall, higher seeding rate did not increase yield at this site which is consistent with results observed in malt barley trials (O'Donovan et al., 2012) where optimal barley yield was achieved with plant densities of about 19 plants/ft², although actual seed rates to achieve that density varied by site year.

**References**

*O'Donovan, J.T., Turkington, T.K., Edney, M.J., Juskiw, P.E., McKenzie, R.H., Harker, K.N. (2012). Effect of seeding date and seeding rate on malting barley production in western Canada. Canadian Journal of Plant Science, 92: 321-330. https://cdnsciencepub.com/doi/10.4141/cjps2011-130*

# Fungicide Trial

## Assessing fungicide timing on durum wheat yield and quality (Turin)

This trial was conducted with the agronomic support of Corny VanDasselaar of Cormova Holdings

**Closest Town:** Turin, AB
**Soil Zone:** Brown
**Seeding Date:** April 20, 2025
**Row Spacing:** 10" (25.4cm)
**Variety(s):** AAC Stronghold
**Reps:** Four
**Previous Crop:** Canola
**Tillage:** N/A

**Herbicides:** Fall herbicide: Glyphosate • Pre-Crop: Glyphosate + Korex II • In-Crop: Talinor
**Seed Treatment:** Cruiser Vibrance Quatro
**Foliar Insecticides:** N/A
**Foliar Fungicides:** Miravis Neo (T1), Miravis Ace (T2, T3)
**PGR:** Manipulator, applied at GS 32
**Irrigation:** Yes

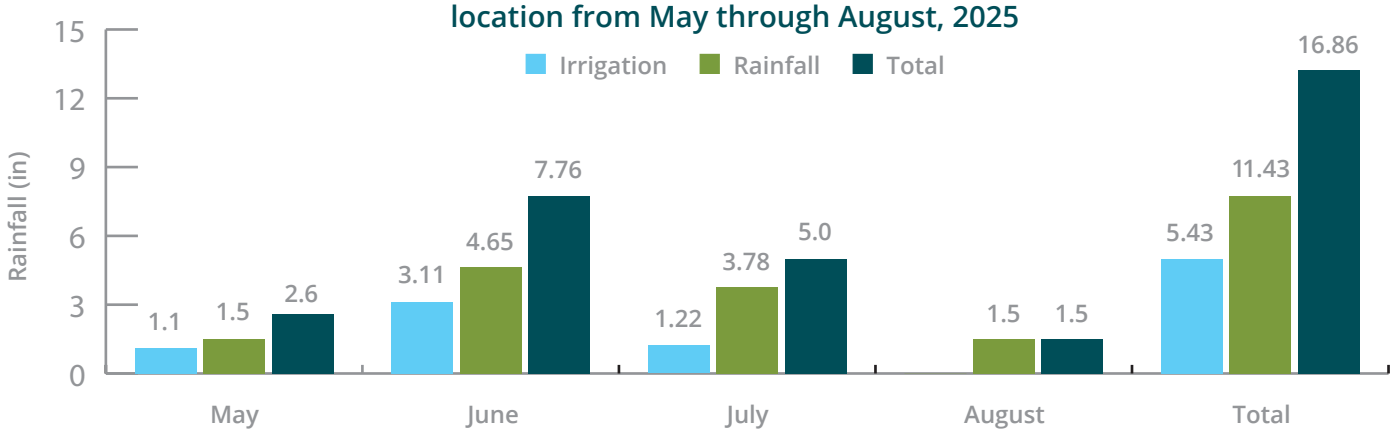
**Soil test results**

| Nutrient | lbs/ac nutrient | Sample depth (inches) |
|---|---|---|
| $NO_3$-N | 22 | 12 |
| P | 47 | 6 |
| K | 642 | 6 |
| $SO_4$-S | 214 | 12 |
| % SOM | 2.2 | 6 |
| pH | 6.8 | 6 |

**Fertilizer Information**

| Product applied | Rate (lbs/ac nutrient) | Timing and Placement |
|---|---|---|
| Urea | 78 | mid-row |
| MAP | 50 | seed placed |
| 15% Boron | 2 | mid-row |
| kinetic Boron (ATP) | .3 L/ac with herbicide and .25 L/ac with T2 fungicide | spray |

**Total Rainfall (in) and irrigation water applied at trial location from May through August, 2025**




## Introduction

Partnering with Goldridge Farming at Turin, Alberta, this trial assessed fungicide timing for AAC Stronghold durum wheat yield and quality. The trial was seeded using a Bourgault drill with 10" (25.4cm) row spacing and ¾" openers. Treatments were replicated and randomized.

## Treatments

***Trial design goal:***
To determine the yield and quality impacts of the following fungicide timings: T1 = GS 32 (early stem elongation, second node), T2 = GS 39 (flag leaf) and T3 = GS 58 (head emergence).

**Treatment 1:** T1 and T2 timing

**Treatment 2:** T1, T2, and T3 timing

**Treatment 3:** T2 and T3 timing

## Results

***In-crop assessment results***
Plant density averaged 34 plants/ft$^2$ (92% of the 37/ft$^2$ target density).

***Yield results***
Mean yields were about 5% higher for treatments that included fungicide timing at heading, but differences were not statistically significant for any of the treatment timings or combinations.

***Grain quality results***
Test weight was higher for treatments that included a timing at heading and percent damaged kernels (DKG) was lower for treatment that included all three fungicide timings. While not significant, there was a trend for lower fusarium for treatments with the heading fungicide timing, but levels were very low for all samples.

***Table 1:*** Yield and quality results comparing fungicide timing for AAC Stronghold durum wheat, at Turin, Alberta, 2025.

| Fungicide Timing | Yield (bu/ac) | | Protein (%) | | Bushel Weight (lbs/bu) | | % Damaged Kernels (DKG) | |
|---|---|---|---|---|---|---|---|---|
| **T1 and T2 Timing** | 108 | a | 12.9 | a | 65.8 | b | 1.77 | a |
| **T1, T2, and T3 Timing** | 115 | a | 12.2 | a | 66.9 | a | 1.50 | ab |
| **T2 and T3 Timing** | 113 | a | 12.5 | a | 66.8 | a | 1.00 | b |
| | | | | | | | | |
| ***p-value*** | *0.2401* | *NS* | *0.6852* | *NS* | *0.0006* | * | *0.0374* | * |
| **CV %** | 4.57% | | 7.61% | | 0.82% | | 29.16% | |

*Values with the same letter within a column are not significantly different. Significant difference if p≤0.05.*

## Summary

Overall, there were no significant yield differences, there was a trend for higher yield for treatments that included head timing. There was also higher test weight and a reduction in damaged kernals (DKG) for treatments that included both flag leaf and head fungicide timing. While this trial was with durum wheat, this trial aligns with findings from a previous study on CWRS wheat showing no yield benefit with fungicide at herbicide (GS 23) or PGR (GS 32) timing (Asif et al. 2021). That study also showed that the optimal timing for both yield and fusarium suppression was head timing, depending on the degree of leaf disease buildup at flag leaf.

**References**

*Asif M., Strydhorst S., Strelkov S.E., Terry A., Harding M.W., Feng J., Yang RC. 2021. Evaluation of disease, yield and economics associated with fungicide timing in Canadian Western Red Spring Wheat. Can. J. Plant Sci. https://doi.org/10.1139/CJPS-2020-0318*

# Bio-Stimulant Trial

## Assessing bio-stimulant effects on wheat yield and quality (Bassano)

This trial was conducted with the agronomic support of Matt Gosling at Premium Ag

**Closest Town:** Bassano, AB
**Soil Zone:** Brown
**Seeding Dates:** April 26 and May 2, 2025[1]
**Row Spacing:** 12" (30.5cm)
**Variety:** AAC Brandon
**Reps:** Four
**Previous Crop:** Peas
**Tillage:** no

**Herbicides:** **Pre-Crop:** Blackhawk + Credit • **In-Crop:** Buctril M, Hornet
**Seed Treatment:** registered fungicide
**Foliar Insecticides:** N/A
**Foliar Fungicides:** N/A
**Fertilizer**: see below
**Irrigation:** no

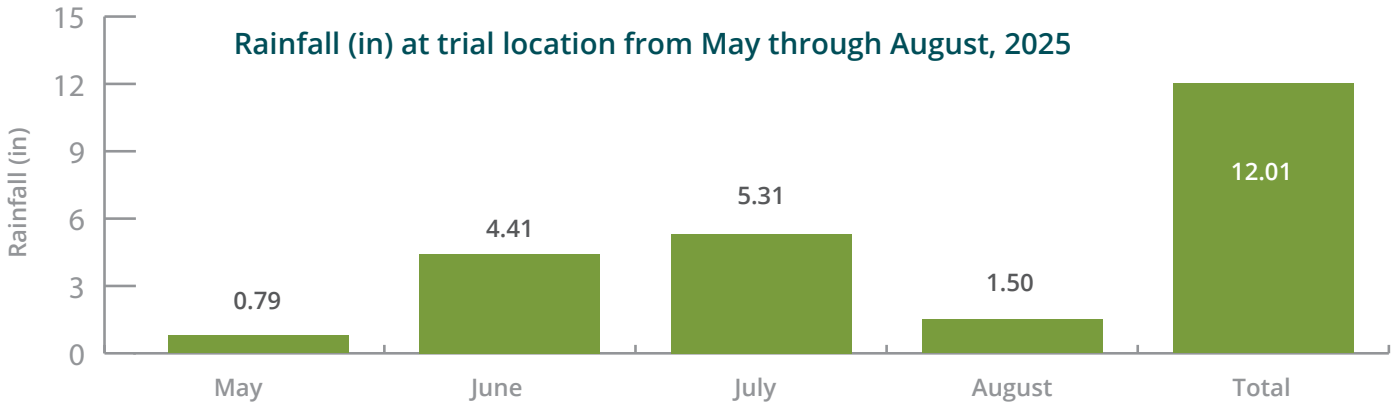
*[1]Fungicide treated wheat seeded April 26 and bio-stimulant treated wheat seeded May 2 (rain delay)*

**Soil test results (by zone)**

| Nutrient | lbs/ac nutrient | Sample depth (inches) |
|---|---|---|
| $NO_3$-N | 30-40 | 12 |
| P | 24-70 | 6 |
| K | 380-1000 | 6 |
| $SO_4$-S | VH | 12 |
| % SOM | 2.3 - 3.9 | 6 |
| pH | 8 | 6 |

**Fertilizer Information**

| Blend or product applied | Variable Rate (lbs/ac of product) | Timing and Placement |
|---|---|---|
| VR MAP + potash (8-39-14) | 66-87 | Side band at seeding |
| Urea Variable Rate | 114-134 | Side band at seeding |
| Biostimulant seed treatment | 4 ounce/bu | Seed treatment |
| Biostimulant seed treatment | 700 ml/ac | Mixed with herbicide, 5LS |




## Introduction

Partnering with Fairville Farming Co at Bassano, AB, this trial assessed the impact of a bio-stimulant seed treatment + foliar combination on AAC Brandon wheat yield and quality. The trial was seeded using a SeedHawk drill with 12" (30.5cm) row spacing and hoe openers. Fertilizer rates were the same for both treatments except for the addition of some micro-nutrients in the bio-stimulant based system.

## Treatments

***Trial design goal:***

To evaluate the impacts on spring wheat yield and grain quality between a conventional seed treat and a bio-stimulant based system (combination of seed treat and foliar).

**Treatment 1:** Bio-stimulant system (seeded May 2, biostimulant seed treatment and foliar at herbicide timing)

**Treatment 2:** Check (registered fungicide seed treatment, seeded April 26)

## Results

***In-crop assessment results***

Plant density was evaluated for the site rather than by treatment, averaging 26 plants/ft².

***Yield results and grain quality results***

Treatment had no effect on yield, with the check having higher grain protein compared to the biostimulant treatment (13.2 versus 12.6%).

***Table 1:*** Yield and grain quality results comparing a bio-stimulant system to conventional seed treatment for the CWRS variety AAC Brandon wheat at Bassano, Alberta, 2025.

| Treatment | Yield (bu/ac) | | Protein (%) | | Bushel Weight (lbs/bu) | |
|---|---|---|---|---|---|---|
| **Bio-stimulant system** | 78 | a | 12.6 | b | 67.5 | a |
| **Check** | 76 | a | 13.2 | a | 67.5 | a |
| | | | | | | |
| ***p-value*** | *0.3187* | *NS* | *0.0110* | * | *0.2659* | *NS* |
| **CV %** | 3.38% | | 2.92% | | 0.28% | |

*Values with the same letter within a column are not significantly different. Significant difference if p≤0.05.*

## Summary

AAC Brandon wheat with a bio-stimulant combination that included a seed dressed and foliar treatment had similar yields but lower protein than the check (conventional fungicide treatment). The bio-stimulant trial area was seeded 6 days later. Delayed seeding may have affected trial results.

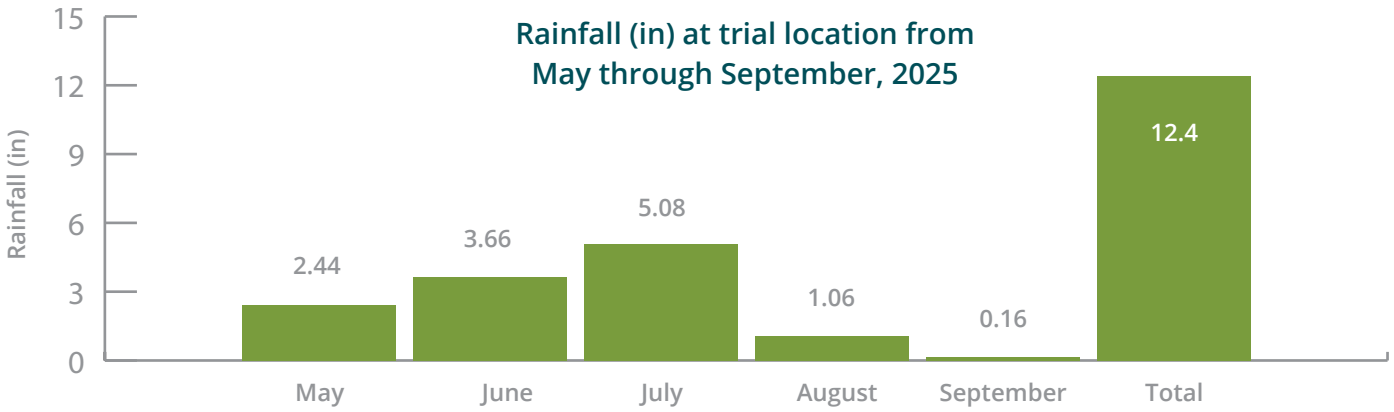
# Plant Growth Regulator Trials

## Assessing plant growth regulator effects on AAC Hockley wheat yield and quality (Carstairs)

This trial was conducted with the agronomic support of Rebecca Wiebe at Core Ag Inputs, Carstairs

**Closest Town:** Carstairs, AB
**Soil Zone:** Black
**Seeding Date:** April 30, 2025
**Row Spacing (cm)**: 10" (25.4cm)
**Variety:** AAC Hockley
**Reps:** Four
**Previous Crop:** Wheat

**Tillage:** Fall harrow
**Herbicides:** **Fall Burn-off:** N/A • **Pre-Crop:** N/A • **In-Crop:** Oxbow • **In-Crop:** Axial, Cirpreme, MCPA Ester
**Seed Treatment:** N/A
**Foliar Insecticides:** N/A
**Foliar Fungicides:** Miravis Neo
**Irrigation:** No




## Introduction

Partnering with Triple H Farms at Carstairs, AB, this trial assessed the impact of plant growth regulator on yield and grain quality for CWRS wheat variety AAC Hockley. The trial was seeded on April 30th using a Bourgault twin shank drill with 12" (30.5cm) row spacings and 3/4" openers. Manipulator™ 620 plant growth regulator was applied GS 30-32 at 10gal/ac water volume. Treatments were replicated and randomized. Lodging effects were analyzed from high-quality drone imagery collected at mid-dough stage or later.

## Treatments

***Trial design goal***
To determine the yield and grain quality impacts of the plant growth regulator Manipulator™ 620 for spring wheat production.

**Treatment 1:** Untreated Check

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

## Results

***In-crop assessment results***
Plant stand density for the site was 23 plants/ft$^2$.

***Yield and grain quality results***
Application Manipulator™ 620 had no effect on yield or grain quality parameters.

***Table 1:*** Yield, and grain quality results comparing Manipulator™ 620 to an untreated check on the CWRS wheat variety AAC Hockley at Carstairs, Alberta, 2025.

| Treatment | Yield (bu/ac) | | Protein (%) | | Bushel Weight (lbs/bu-A) | |
|---|---|---|---|---|---|---|
| **PGR (Manipulator)** | 84 | a | 11.8 | a | 68 | a |
| **Check** | 81 | a | 12.3 | a | 68 | a |
| | | | | | | |
| ***p-value*** | *0.2554* | *NS* | *0.2626* | *NS* | *0.6612* | *NS* |
| **CV %** | 1.71% | 0.44% | 0.17% | % | 1.79 | % |

*Values with the same letter within a column are not significantly different. Significant difference if p≤0.05.*

### *Drone imagery analysis results*

Dr. Felippe Karp, Instructor and Researcher at Olds College did a thorough analysis of high-resolution drone imagery captured just before harvest, comparing the extent and degree of lodging between side-by-side PGR and check plots. Figures 1 and 2 show the treatment effect and lodging classification for the site. There was minimal lodging pressure at this site with no opportunity to demonstrate PGR efficacy. This may have reflected weather conditions that limited the potential for lodging (early season drought) and/or good variety lodging resistance (AAC Hockley - rated 'Very Good').

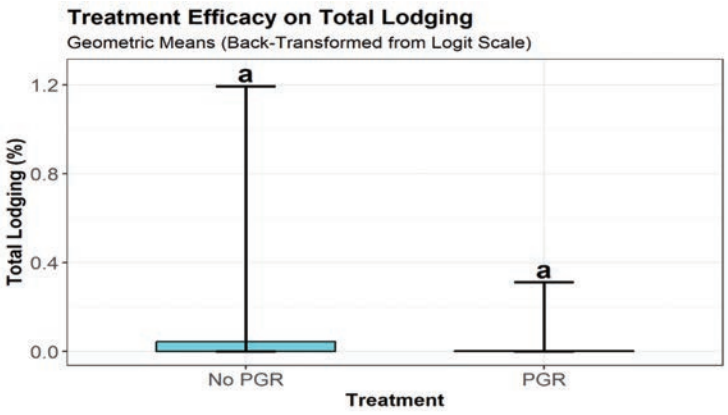



***Figure 1.*** *PGR Treatment Effect on Total Lodging (Model Estimates)*

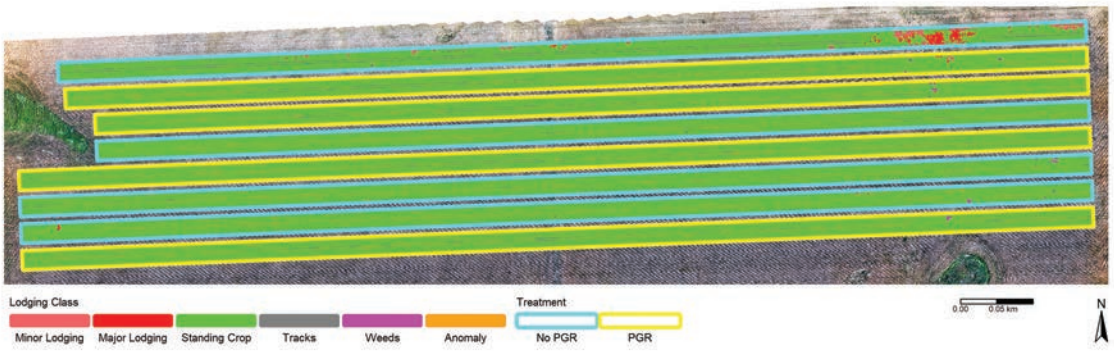



***Figure 2.*** *Lodging classification map overlaid on RGB imagery*

## Summary

Application of the PGR Manipulator had no impact on yield and grain quality. Small plot research conducted in Alberta indicated that the benefit of a PGR application is more likely to occur in environments with high lodging potential (Strydhorst, Hall, & Perrott, 2018). The Alberta Seed Guide rates AAC Hockley as having a lodging rating of 'Very Good'.

### References

*Strydhorst, S., Hall, L., & Perrott, L. (2018). Plant growth regulators: What agronomists need to know. Crops & Soils, 51(6), 22-26.*

# Assessing plant growth regulator effects on yield and quality of AAC Wheatland VB wheat (Standard)

This trial was conducted with the agronomic support of Matt Gosling at Premium Ag

**Closest Town:** Standard, AB
**Soil Zone:** Dark Brown Chernozem
**Seeding Date:** May 4, 2025
**Row Spacing (cm)**: 12" (30.5 cm)
**Variety:** AAC Wheatland VB
**Reps:** Three
**Previous Crop:** Pulse
**Tillage:** None

**Herbicides:** **Fall Burn-off:** Fierce, glyphosate · **Pre-Crop:** Glyphosate · **In-Crop:** Cirray, Infinity FX
**Seed Treatment:** Raxil Pro Shield
**Foliar Insecticides:** N/A
**Foliar Fungicides:** N/A
**Fertilizer:** NPK Side-banded, 10-34-0 in seed row
**Irrigation:** No

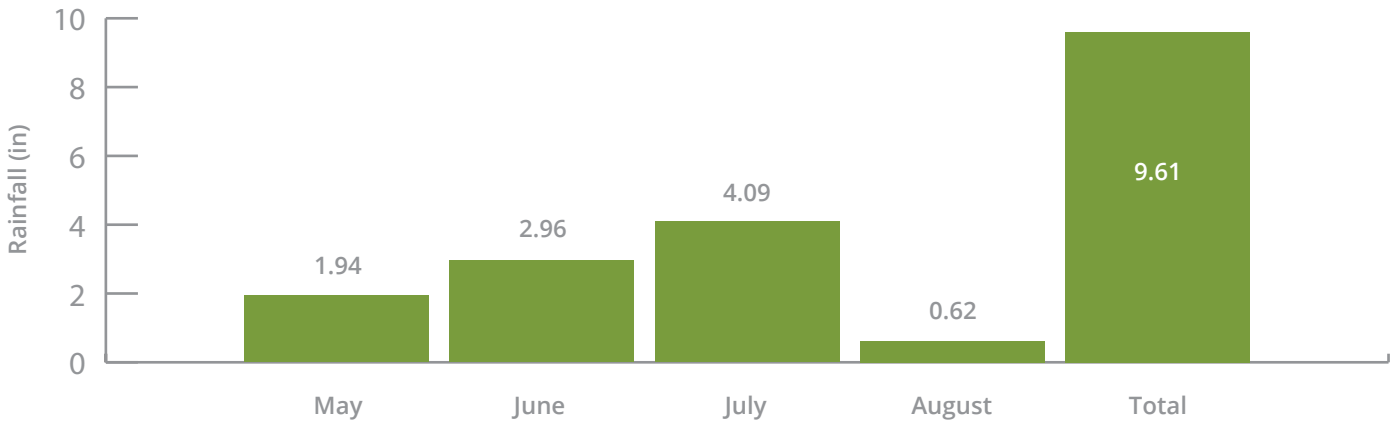
**Soil test results (by zone)**

| Nutrient | (lbs/ac nutrient) | Sample depth (inches) |
|---|---|---|
| $NO_3$-N | 65 - 76 | 24 |
| P | 26 - 42 | 6 |
| K | 160 - 320 | 6 |
| $SO_4$-S | 10 - 100 | 24 |
| % SOM | 3.5 - 3.7 | 6 |
| pH | 5.9 - 6.9 | 6 |

**Fertilizer Information**

| Blend or product applied | Variable Rate (lbs or gal of product/ac) | Timing and Placement |
|---|---|---|
| 10-34 (liquid) | 4 gal/ac | seed row |
| Urea/MAP/KCl (34-8-5-0-4.4Cl-0.72Zn) | 214 - 272 | side band at seeding |

**Rainfall (in) at trial location from May through August, 2025**




## Introduction

Partnering with Schultz Holdings Ltd at Standard, AB this trial assessed the impact of plant growth regulator on yield and grain quality for the CWRS wheat variety AAC Wheatland VB. The trial was seeded using a Seedhawk drill with 12" (30.5cm) row spacings. Manipulator™ 620 plant growth regulator was applied at GS 30-32 with 10 gal/ac water volume. Treatments were replicated and randomized. Lodging effects were analyzed from high-quality drone imagery collected at mid-dough stage or later.

## Treatments

### *Trial design goal*

To determine the yield and quality impacts of the plant growth regulator Manipulator™ 620 on yield and quality of AAC Wheatland VB spring wheat.

**Treatment 1:** Manipulator™ 620 applied at GS31-32 @ 0.7L/ac

**Treatment 2:** Untreated check

## Results

### *In-crop assessment results*

Plant stand density for the site averaged 34 plants/ft$^2$ (just above the target density of 32/ft$^2$).

### *Yield and grain quality results*

Application Manipulator™ 620 had no effect on yield or grain quality parameters.

***Table 1:*** Yield, and grain quality results comparing Manipulator™ 620 to an untreated check on the CWRS wheat variety AAC Wheatland VB at Standard, Alberta, 2025.

| Treatment | Yield (bu/ac) | | Protein (%) | | Bushel Weight (lbs/bu) | |
|---|---|---|---|---|---|---|
| **Check** | 92 | a | 14.6 | a | 67.2 | a |
| **Manipulator™ 620 PGR** | 96 | a | 14.5 | a | 67.5 | a |
| | | | | | | |
| ***p*-value** | *0.6349* | *NS* | *0.6349* | *NS* | *0.3745* | *NS* |
| **CV%** | 5.10% | | 0.94% | | 0.57% | |

*Values with the same letter within a column are not significantly different. Significant difference if p≤0.05.*

### *Drone imagery analysis results*

Dr. Felippe Karp, Instructor and Researcher at Olds College did a thorough analysis of high-resolution drone imagery captured just before harvest, comparing the extent and degree of lodging between side-by-side PGR and check plots. Figures 1 and 2 show the treatment effect and lodging classification for the site. While PGR plots had numerically lower lodging (8.4 versus 16.9%), the differences were not significantly different (p=0.291). This reflected the inherent high field variability (site had significant topography) and PGR effects that may have been low because of the weather conditions and a wheat variety resistant to lodging (AAC Wheatland VB - rated 'Very Good').

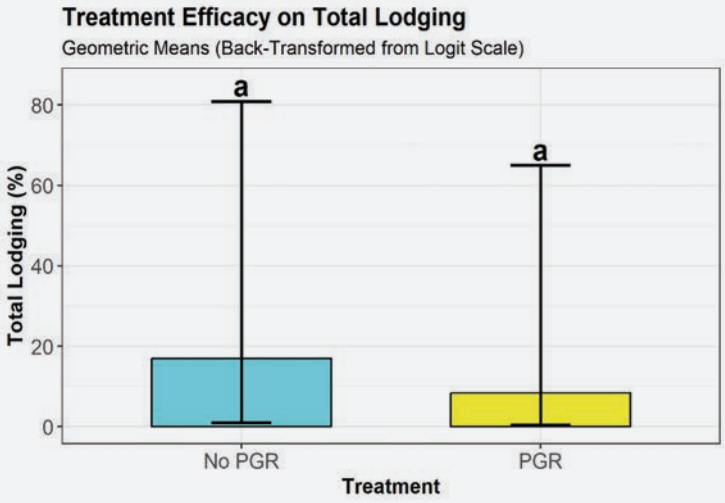



***Figure 1.*** *PGR Treatment Effect on Total Lodging (Model Estimates)*

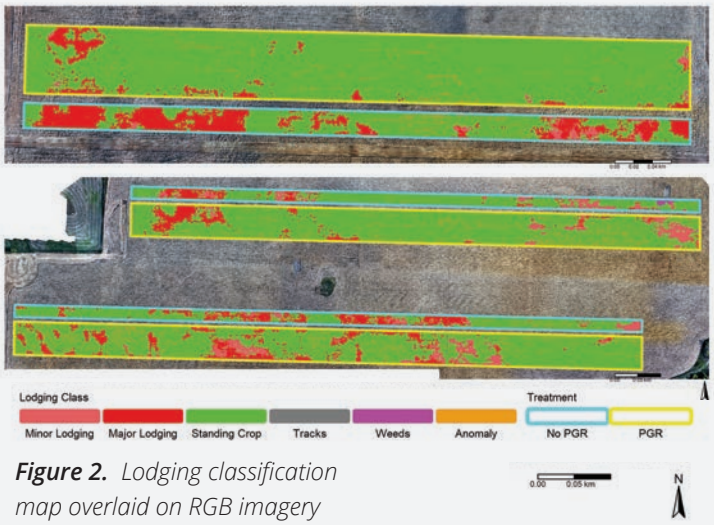



***Figure 2.*** *Lodging classification map overlaid on RGB imagery*

## Summary

Application of Manipulator™ 620 had no impact on yield and quality. Small plot research conducted in Alberta indicated that the benefit of a PGR application is more likely to occur in environments with high lodging potential (Strydhorst, Hall, & Perrott, 2018). In the Alberta Seed Guide, AAC Wheatland VB has a lodging rating of 'Very Good'.

**References**

*Strydhorst, S., Hall, L., & Perrott, L. (2018). Plant growth regulators: What agronomists need to know. Crops & Soils, 51(6), 22-26.*

# Assessing plant growth regulator effect on lodging of irrigated AAC Wheatland VB wheat (Strathmore)

This trial was conducted with the agronomic support of Matt Gosling at Premium Ag

**Closest Town:** Strathmore, AB
**Soil Zone:** Black Chernozem
**Seeding Date:** May 2, 2025
**Row Spacing:** 12" (30.5cm)
**Variety:** AAC Wheatland VB
**Reps:** Three
**Previous Crop:** Barley
**Tillage:** Heavy harrow, fall 2024

**Herbicides:** Fall Burn-off: N/A • Pre-Crop: N/A • In-Crop: Simplicity GoDRI, OcTTain
**Seed Treatment:** Vibrance Quattro
**Foliar Insecticides:** N/A
**Foliar Fungicides:** N/A
**Fertilizer:** Variable rate; side-banded
**Irrigation:** Yes

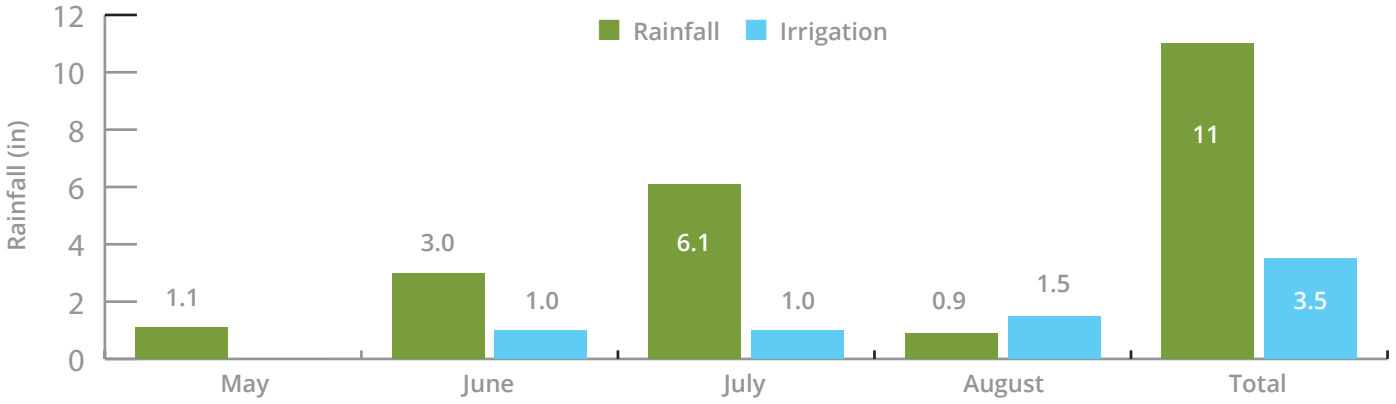
**Soil test results (by zone)**

| Nutrient | lbs/ac nutrient | Sample depth (inches) |
|---|---|---|
| $NO_3$-N | 78 - 170 | 24 |
| P | 110 - 130 | 6 |
| K | 460 - 690 | 6 |
| $SO_4$-S | 120 - 140 | 24 |
| % SOM | 4.7 - 5.2 | 6 |
| pH | 6.3 - 6.5 | 6 |

**Fertilizer Information**

| Blend or product applied | Variable Rate (lbs/ac of product) | Timing and Placement |
|---|---|---|
| MAP (Variable Rate) | 38 - 50 | side band at seeding |
| Urea (Variable Rate) | 167 - 279 | side band at seeding |

**Rainfall (in) at trial location from May through August, 2025**




## Introduction

Partnering with Bruce Farms at Strathmore, AB, this trial assessed the impact of plant growth regulator on reduced lodging for CWRS wheat variety AAC Wheatland VB on a high fertility irrigated site. The trial was seeded using a John Deere SeedMaster drill with 12" (30.5cm) row spacing and hoe openers. Manipulator™ 620 plant growth regulator was applied at GS 31-32 with 10 gal/ac water volume. Treatments were replicated and randomized. Yields and grain quality information could not be collected because the site was harvested at an angle to treatment direction. Lodging effects were analyzed from high-quality drone imagery collected at mid-dough stage or later.

## Treatments

*Trial design goal*

To determine the impacts of the plant growth regulator Manipulator™ 620 on yield and quality of AAC Wheatland VB wheat.

**Treatment 1:** Untreated Check

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

## Results

*In-crop assessment results*

Plant stand density for the site averaged 26 plants/ft$^2$ (same as target plant population).

*Yield and grain quality results*

Yield or grain quality information was not available by treatment because the field needed to be harvested at an angle to treatment direction. Yield of AAC Wheatland VB wheat averaged across the trial area was 120 bu/ac.

*Drone imagery analysis results*

Dr. Felippe Karp, Instructor and Researcher at Olds College did a thorough analysis of high-resolution drone imagery captured just before harvest, comparing the extent and degree of lodging between side-by-side PGR and check plots. Lodging pressure within the check was considered moderate, affecting about 18% of the check area, with PGR application reducing that lodging by an average of 84% (p=0.0312).

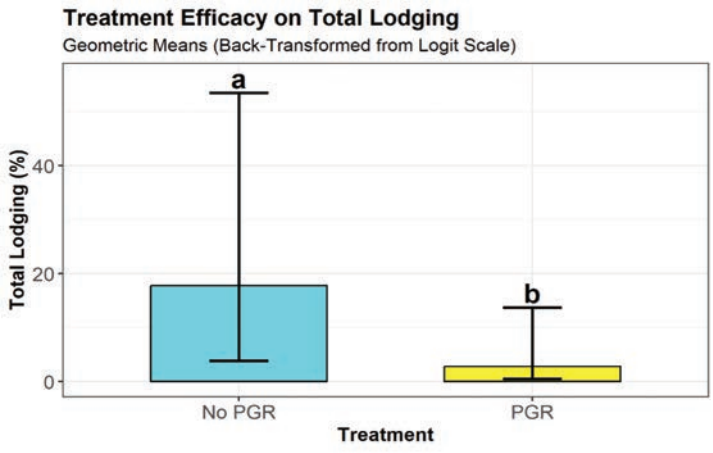



***Figure 1**. PGR Treatment Effect on Total Lodging (Model Estimates)*

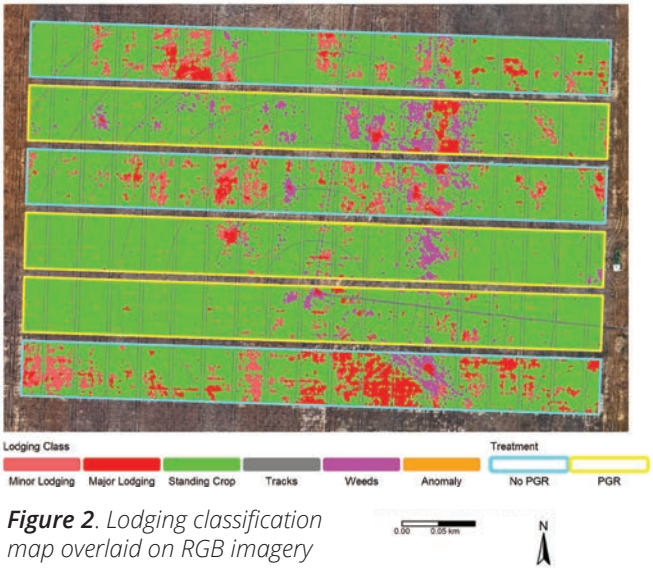



***Figure 2**. Lodging classification map overlaid on RGB imagery*

## Summary

Application of Manipulator™ 620 significantly reduced lodging for AAC Wheatland VB wheat at a high fertility irrigated site near Strathmore. Whole field wheat yield was 120 bu/ac but treatment data for yield and quality were unavailable due to the farmer having to harvest the site at an angle to treatment direction. Small plot research conducted in Alberta indicated that the benefit of a PGR application is more likely to occur in environments with high lodging potential (Strydhorst, Hall, & Perrott, 2018). In the Alberta Seed Guide, AAC Wheatland VB has a lodging rating of 'Very Good'.

**References**

*Strydhorst, S., Hall, L., & Perrott, L. (2018). Plant growth regulators: What agronomists need to know. Crops & Soils, 51(6), 22-26.*

# Seed-placed Fertilizer Trial

## Assessing the benefits of phosphate placement for wheat yield and quality (Brownvale)

This trial was conducted with the agronomic support of North Peace Applied Research Association

**Closest Town:** Brownvale, AB
**Soil Zone:** Dark Grey
**Seeding Date:** May 9, 2025
**Row Spacing:** 12" (30.5cm)
**Variety:** AAC Viewfield
**Reps:** Four
**Previous Crop:** Canola

**Tillage:** Heavy harrow late April
**Herbicides:**
**Fall Burn-off:** N/A • **Pre-Crop:** Glyphosate + Florasulam • **In-Crop:** Pixxaro, Hasten, MCPA Ester, Maxunitech, Interlock; glyphosate pre-harvest
**Seed Treatment:** N/A
**Foliar Insecticides:** N/A

**Foliar Fungicides:** N/A
**Fertilizer**: Urea (161 lbs/ac) & MicroPhos+K (40 or 51 lbs/ac)
**Irrigation:** No

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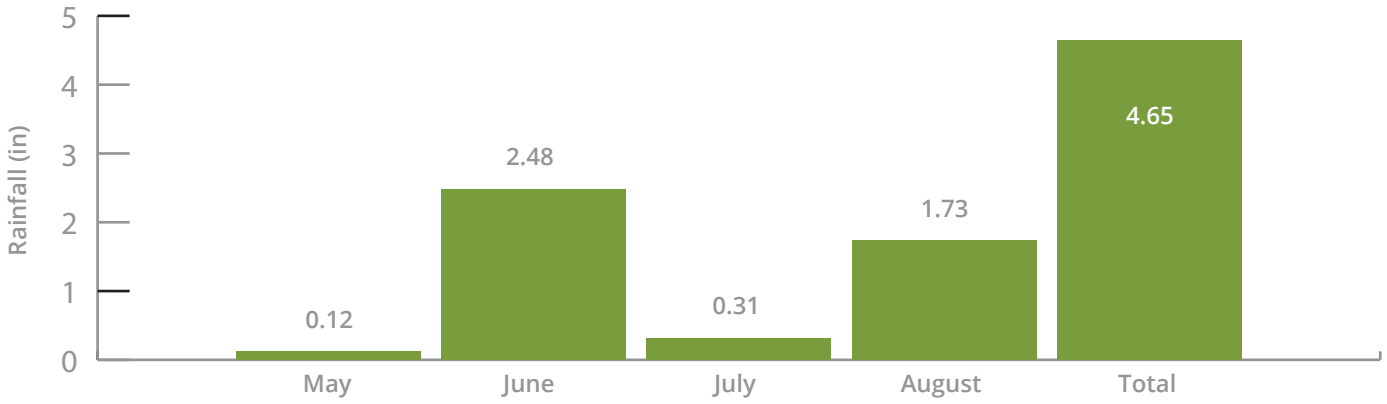
**Rainfall (in) at trial location from May through August, 2025**




## Introduction

Partnering with RTA Farms at Brownvale, AB, this trial evaluated seed placed phosphate + potassium fertilizer at two rates compared to the conventional practice of side banding for the CWRS wheat variety AAC Viewfield. The trial was seeded using a SeedHawk drill with 12" row spacing and knife openers. Treatments were replicated and randomized. Drought conditions were a factor that limited yield at this site, with minimal rain for the first 6 weeks and only 4.7 inches through the growing season.

## Treatments

***Trial design goal:***

To determine yield and quality impacts of seed-placed versus side banded fertilizer for AAC Viewfield wheat.

**Treatment 1:** Check (Standard practice of P/K fertilizer blend side-banded at 51 lbs/ac)

**Treatment 2:** Seed-placed P/K fertilizer blend at 51 lbs/ac

**Treatment 3:** Seed-placed P/K fertilizer blend at 40 lbs/ac

**Note:** All treatments had full rate of urea side banded

## Results

***In-crop assessment results***

Crop density was 21 to 22 plants/ft² with no differences by fertilizer blend placement or rate.

***Yield and grain quality results***

Placement method or rate of the phosphate-potassium fertilizer blend had no effect on yield or grain quality of AAC Viewfield wheat.

***Table 1:*** Plant stand, yield and quality results comparing placement and rate for a phosphate-potassium fertilizer blend on CWRS variety AAC Viewfield at Brownvale, Alberta, 2025.

| | **Plant Stand** (plants/ft²) | | **Yield** (bu/ac) | | **Protein** (%) | | **Bushel Weight** (lbs/bu) | |
|---|---|---|---|---|---|---|---|---|
| **Check** | 22 | a | 38 | a | 14.0 | a | 63.6 | a |
| **Seed-placed 51 lbs/ac** | 21 | a | 37 | a | 14.3 | a | 63.3 | a |
| **Seed-placed 40 lbs/ac** | 21 | a | 37 | a | 13.9 | a | 64.0 | a |
| | | | | | | | | |
| ***p-value*** | 0.5494 | NS | 0.5771 | NS | 0.2421 | NS | 0.2114 | NS |
| **CV %** | 9.75% | | 6.16% | | 3.27% | | 1.2% | |

*Values with the same letter within a column are not significantly different. Significant difference if p≤0.05.*

## Summary

Neither placement method or rates of a phosphate-potassium fertilizer blend affected plant density, yield or quality parameters for AAC Viewfield wheat. Yields were below average for the farm, owing to drought conditions with only 4.7 inches of growing season rainfall at the site.

# Seeding Rate Trials

## Comparing seeding rate effects on AAC Viewfield wheat yield and quality (Nisku)

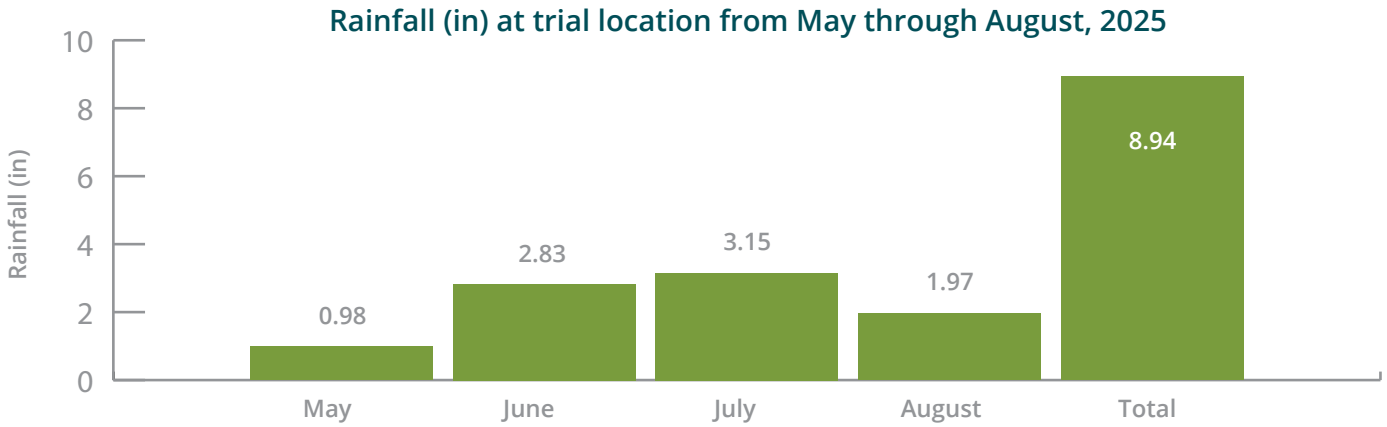
This trial was conducted with the agronomic support of Rachelle Farrell at Croptimistic Technology

**Closest Town:** Nisku, AB
**Soil Zone:** Black
**Seeding Date:** May 7, 2025
**Row Spacing:** 10" (25.4cm)
**Variety:** AAC Viewfield
**Reps:** Three
**Previous Crop:** Barley
**Tillage:** N/A

**Herbicides:** **Fall Burn-off:** N/A · **Pre-Seed:** Insight · **In-Crop:** Axial Maxx, Axial BIA; Heat LQ + glyphosate pre-harvest)
**Seed Treatment:** fungicide seed treatment
**Foliar Insecticides:** N/A
**Foliar Fungicides:** Nexicor (flag leaf)
**Irrigation:** No

**Fertilizer Information**

| Blend or product applied | Average for Variable Rate (lbs/ac of product) | Timing and Placement |
|---|---|---|
| Urea | 165 | Side Band |
| MES 15 | 113 | Side Band |
| Potash | 62 | Side Band |




## Introduction

Partnering with Great West Farms at Nisku Alberta, this trial compared four different seeding rates on the spring wheat variety, AAC Viewfield. The trial was seeded using a JD 1910 air drill with 10" (25.5cm) row spacing and 4" openers. Seeding rates to target plant stand treatments were determined using thousand kernel weight (32.5g), germination percentage (95%) and farm-specific emergence mortality estimates (10%). Seeding rates to attain the treatment target plant stands/ft² of 30 (average variable rate), 24 (low rate), 30 (medium rate) and 36 (high rate) were 109, 87, 109 and 130 lbs/ac respectively. Treatments were replicated.

## Treatments

*Trial design goal*

To evaluate the impacts of seeding rate on yield and grain quality for AAC Viewfield wheat.

**Treatment 1:** Low - target 24 plants/ft$^2$ (87 lbs/ac seed rate)

**Treatment 2:** Medium - target 30 plants/ft$^2$ (109 lbs/ac seed rate)

**Treatment 3:** High - target 36 plants/ft$^2$ (130 lbs/ac seed rate)

**Treatment 4:** Variable rate (average 30 plants/ft$^2$, 109 lbs/ac seed rate)

## Results

*In-crop assessment results*

Plant densities were at or above the target populations, with the high seed rate plots significantly higher than the low and medium and similar to the variable rate treatment.

*Yield results*

While the mean yield for the lowest seed rate was 10-15% below the medium, high and variable rate treatments, that difference was not statistically significant due to site variability.

*Grain quality results*

No differences were seen in quality parameters including protein and test weight.

***Table 1:*** Plant stand counts, yield, and grain quality with low, medium, high and variable seeding rates for AAC Viewfield wheat at Nisku, Alberta, 2025.

| Target plant density | Actual Plant Density (plants/ft$^2$) | | Yield (bu/ac) | | Protein (%) | | Bushel Weight (lbs/bu) | |
|---|---|---|---|---|---|---|---|---|
| **Low (24/ft²)** | 26 | b | 66 | a | 12.7 | a | 65.6 | a |
| **Medium (30/ft²)** | 27 | b | 74 | a | 12.3 | a | 67.0 | a |
| **High (36/ft²)** | 34 | a | 72 | a | 12.2 | a | 66.5 | a |
| **Variable (30/ft²)** | 30 | ab | 77 | a | 12.2 | a | 67.0 | a |
| | | | | | | | | |
| ***p-value*** | 0.0028 | * | 0.1836 | NS | 0.6637 | NS | 0.4336 | NS |
| **CV %** | 12.81% | | 9.21% | | 7.87% | | 2.22% | |

*Values with the same letter within a column are not significantly different. Significant difference if p≤0.05.*

## Summary

Seeding rate had no effect on yield of AAC Viewfield wheat at this site. This is consistent with research trials that demonstrated optimal wheat yield with seeding rates that achieved plant densities greater than 20/ft² (Beres et al, 2011, Collier et al, 2021). Other factors like crop competition with weeds and better synchrony with head emergence are potential benefits with higher plant density that can contribute to yield or grain quality.

**References**

*Beres, B. L., Cárcamo, H. A., Yang, R. C., & Spaner, D. M. (2011). Integrating spring wheat sowing density with variety selection to manage wheat stem sawfly. Agronomy journal, 103(6), 1755-1764.*

*Collier, G.R.S.; Spaner, D.M.; Graf, R.J.; Beres, B.L. (2021) Optimal Agronomics Increase Grain Yield and Grain Yield Stability of Ultra Early Wheat Seeding Systems. Agronomy, 11, 240. https://doi.org/10.3390/agronomy11020240*

# Comparing seeding rate effects on yield and quality for AAC Brandon wheat (Strathmore)

This trial was conducted with the agronomic support of Andrew Clements at Premium Ag

**Closest Town:** Strathmore, AB
**Soil Zone:** Dark Brown
**Seeding Date:** May 5, 2025
**Row Spacing:** 10" (25.4cm)
**Variety:** AAC Brandon
**Reps:** Four
**Previous Crop:** Oats
**Tillage:** In sloughs and draws with Joker

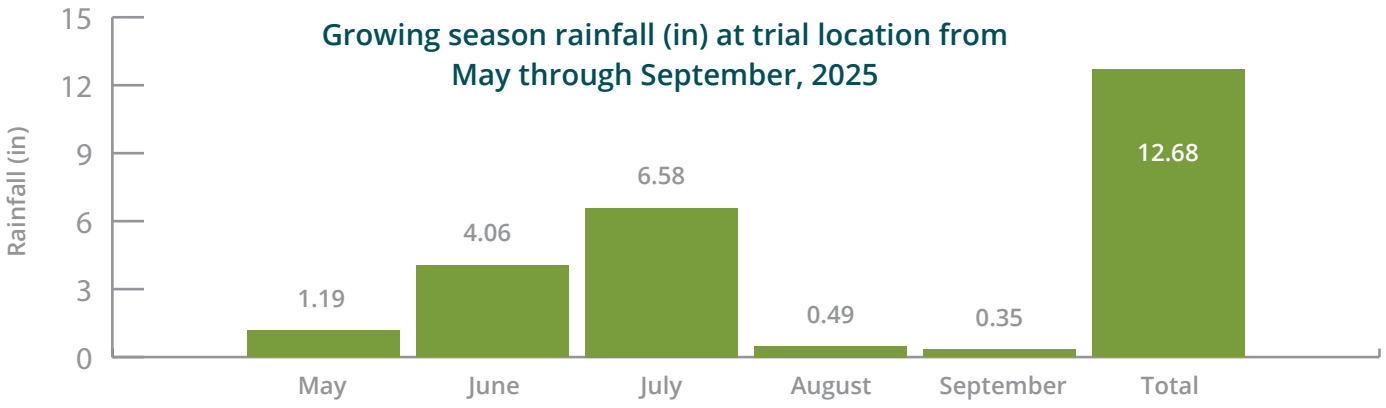
**Herbicides:** **Fall Burn-off:** N/A · **Pre-Seed:** Glyphosate, 2,4-D · **In-Crop:** Simplicity, OcTTain
**Seed Treatment:** Straxan
**Foliar Insecticides:** N/A
**Foliar Fungicides:** N/A
**Irrigation:** No

**Soil test results**

| Nutrient | lbs/ac nutrient | Sample depth (inches) |
|---|---|---|
| $NO_3$-N | 38 | 0 - 24 |
| P | 33 | 0 - 6 |
| K | 290 | 0 - 6 |
| $SO_4$-S | 20.5 | 0 - 24 |
| % SOM | 4.1 | 0 - 6 |
| pH | 6.7 | 0 - 6 |

**Fertilizer Information**

| Blend or product applied | Rate (lbs/ac of product) | Timing and Placement |
|---|---|---|
| Urea | 187 | Side band |
| 6-28-26 | 69 | Seed row |




## Introduction

Partnering with Mullen Farms at Strathmore, AB this trial compared three seeding rates on AAC Brandon wheat. The trial was seeded using a Bourgault drill with 9.8" (24.9 cm) row spacing on Paralink shanks with 3/4" knife openers. Seeding rates to target plant stand treatments were determined using thousand kernel weight (37.2g), germination percentage (98%), and farm-specific emergence mortality estimates (10%). Treatments were replicated and randomized.

## Treatments

*Trial design goal*

To determine the yield and grain quality impacts of seeding rates on CWRS AAC Brandon wheat.

**Treatment 1:** Target 25 plants/ft$^2$ (104 lbs/ac)

**Treatment 2:** Target 30 plants/ft$^2$ (122 lbs/ac)

**Treatment 3:** Target 34.5 plants/ft$^2$ (140 lbs/ac)

## Results

*In-crop assessment results*

Plant densities were only 73% of desired (target) population, with the high achieving significantly higher density (26/ft²) than the medium and low rates (18 and 22/ft²), but no significant difference in density between medium and low rates due to site variability.

*Yield results*

No significant yield differences were seen between treatments.

*Grain quality results*

As with the yield, no differences were seen in grain quality parameters including protein and test weight.

***Table 1:*** Plant stand counts, yield, and quality results comparing three target plant densities for AAC Brandon wheat at Strathmore, Alberta, 2025.

| Target plant density | Actual Plant Density (plants/ft$^2$) | | Yield (bu/ac) | | Protein (%) | | Bushel Weight (lbs/bu) | |
|---|---|---|---|---|---|---|---|---|
| **Low (25/ft²)** | 18 | b | 107 | a | 13.9 | a | 67.3 | a |
| **Medium (30/ft²)** | 22 | b | 107 | a | 14.2 | a | 67.3 | a |
| **High (34.5/ft²)** | 26 | a | 106 | a | 13.7 | a | 67.7 | a |
| | | | | | | | | |
| ***p-value*** | 0.0029 | * | 0.8437 | NS | 0.2706 | NS | 0.3406 | NS |
| **CV %** | 18.89% | | 2.74% | | 3.52% | | 0.60% | |

*Values with the same letter within a column are not significantly different. Significant difference if p≤0.05.*

## Summary

Overall, AAC Brandon wheat yields were very high at this site with differences in plant density not affecting yield or quality. This is consistent with research trials that demonstrated optimal wheat yield with seeding rates that achieved plant densities greater than 20/ft² (Beres et al, 2011, Collier et al, 2021). Other factors like crop competition with weeds and better synchrony with head emergence are potential benefits with higher plant density that can contribute to yield or grain quality.

**References**

*Beres, B. L., Cárcamo, H. A., Yang, R. C., & Spaner, D. M. (2011). Integrating spring wheat sowing density with variety selection to manage wheat stem sawfly. Agronomy journal, 103(6), 1755-1764.*

*Collier, G.R.S.; Spaner, D.M.; Graf, R.J.; Beres, B.L. (2021) Optimal Agronomics Increase Grain Yield and Grain Yield Stability of Ultra Early Wheat Seeding Systems. Agronomy, 11, 240. https://doi.org/10.3390/agronomy11020240*

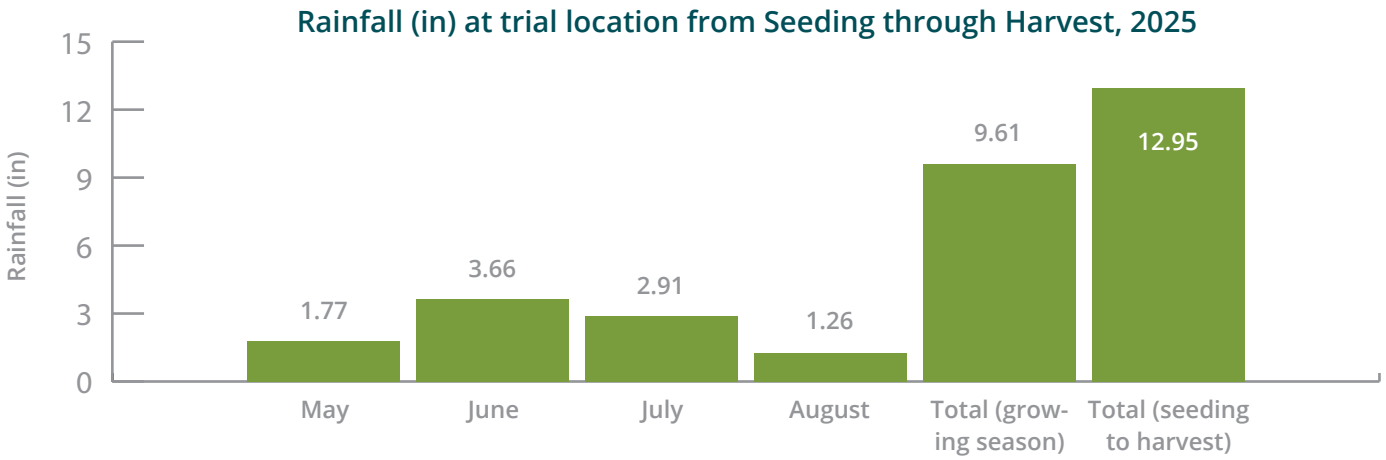
# Seeding Rate Trials

## Comparing seeding rate effects on AAC Coldfront winter wheat yield and quality (Granum)

This trial was conducted with the agronomic support of Ashley Wagenaar of Farming Smarter

**Closest Town:** Granum, AB
**Soil Zone:** Dark Brown
**Seeding Date:** Sept. 16, 2024
**Row Spacing:** 10" (25.4cm)
**Variety:** AAC Coldfront
**Reps:** Four
**Previous Crop:** Peas
**Tillage:** None

**Herbicides:** **Fall Burn-off:** Glyphosate, Intruvix A and B, SZ-75 • **Pre-Seed:** Blackhawk EVO + Glyphosate • **In-Crop:** none
**Seed Treatment:** Terraxa
**Foliar Insecticides:** N/A
**Foliar Fungicides:** N/A
**Irrigation:** No
**Soil Moisture at Seeding:** Very good




## Introduction

Partnering with Silverwood Ventures at Granum, AB this trial compared three seeding rates for the winter wheat variety, AAC Coldfront. The trial was seeded using a New Holland P2082 disc drill with 10" (25.5cm) row spacing. Seeding rates to target plant stand treatments were determined using thousand kernel weight (38 g), germination percentage (98%) and farm-specific emergence mortality estimates (20%). Treatments were replicated and randomized.

## Treatments

*Trial design goal*

To determine the yield and grain quality impacts of seeding rates for AAC Coldfront winter wheat.

**Treatment 1:** Target 25 plants/ft$^2$ (116 lbs/ac)

**Treatment 2:** Target 30 plants/ft$^2$ (139 lbs/ac)

**Treatment 3:** Target 35 plants/ft$^2$ (163 lbs/ac)

## Results

### *In-crop assessment results*

Spring mean target plant densities were within 2%, 5%, and 7% of desired densities for the 25, 30, and 35 plants/ft$^2$ target, with differences between rates statistically significant. Spring (mid-April) averaged about 93% of fall plant counts (late October, data not shown).

### *Yield results*

Winter wheat yields were significantly higher for low and medium seeding rates, decreasing by about 10% for the highest seeding rate.

### *Grain quality results*

Grain protein was 14.5% for the high rate compared to 14.2% for the low and medium seed rate treatments, with no difference in test weight and other quality parameters measured.

***Table 1:*** Plant stand counts, yield, and grain quality for three target plant densities for the winter wheat variety, AAC Coldfront, at Granum, Alberta, 2025.

| Target plant density | Spring Plant Density (plants/ft$^2$) | | Yield (bu/ac) | | Protein (%) | | Bushel Weight (lbs/bu) | |
|---|---|---|---|---|---|---|---|---|
| **Low (25/ft²)** | 25 | c | 56 | a | 14.2 | b | 62.9 | a |
| **Medium (30/ft²)** | 32 | b | 55 | a | 14.2 | b | 62.5 | a |
| **High (35/ft²)** | 38 | a | 51 | b | 14.5 | a | 62.3 | a |
| | | | | | | | | |
| ***p-value*** | <0.0001 | * | 0.0158 | * | 0.0018 | * | 0.0631 | NS |
| **CV %** | 17.47% | | 4.49% | | 1.44% | | 0.72% | |

*Values with the same letter within a column are not significantly different. Significant difference if p≤0.05.*

## Summary

Overall, target plant densities were achieved for this winter wheat trial, and yields were significantly higher for the low and medium plant densities (25 and 32 versus 38/ft²). Grain protein was slightly higher for the high plant density treatment. This finding supports small plot research which showed optimal winter wheat yield when plant densities above 20 plants/ft² were achieved in the following spring (Beres et. al, 2016). That study recommended the practice of higher seeding rates to ensure winter wheat yield stability in the event of poor survival, with the added benefit of better weed competition from higher plant densities often reducing the need for incrop herbicide.

**References**

*Beres, B. L., T. K. Turkington, H. R. Kutcher, B. Irvine, E. N. Johnson, J. T. O'Donovan, K. N. Harker, C. B. Holzapfel, R. Mohr, G. Peng, and D. M. Spaner. 2016. Winter Wheat Cropping System Response to Seed Treatments, Seed Size, and Sowing Density. Agron. J. 108:1101-1111.*

# Plot2Farm Field Days

In the 2025 growing season, the Plot2Farm program implemented two separate on-farm field days that allowed farmers and industry to view the field-scale farm trials. These field days provided space to discuss opportunities and challenges with on-farm research.

## Strathmore

The Strathmore field day was held on June 24th, in collaboration with Premium Ag, Bruce Farms Ltd, and Schultz Holdings Ltd toured multiple on-farm trials in the wheatland County Region.


## Nisku

The Nisku field day was held on July 16th, in collaboration with Croptimistic Technology, Alberta AgriSystems Living Lab, and Great West Farms.

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