Plot2 Farm

2024

Plot2Farm
TRIALS AND RESULTS

An on-farm research trial program
supported by Alberta Grains

Alberta Grains

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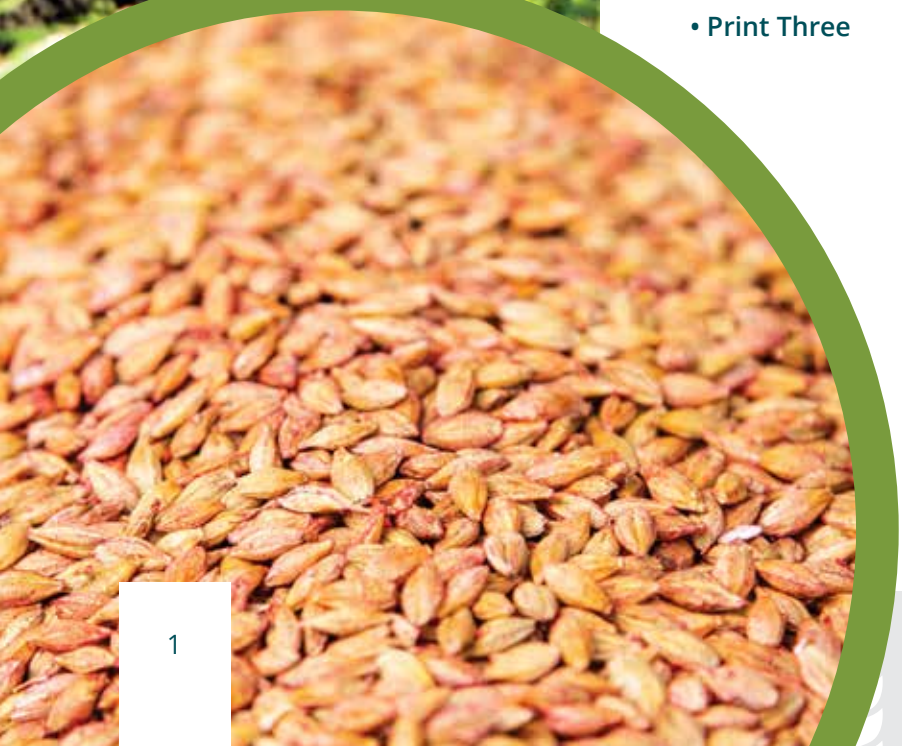


Special thanks

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:

- **Bishop Farms**
- **Blue J Farms Ltd.**
- **Boese Enterprises**
- **Canola Farms Inc.**
- **DSL Farms**
- **Punko Farms**
- **Mercer Seeds Ltd.**
- **Triple H Farms**

Supporting agronomists:

- **Ashley Wagenaar at Farming Smarter**
- **Joshua Leffers at Living Soil Agronomy**
- **Kabal Singh at Gateway Research Organization**
- **Lance Ouellette at Lakeland Applied Research Association**
- **Naveen Arora at Mackenzie Applied Research Association**
- **Rebecca Wiebe at Core Ag Inputs Carstairs**
- **Roger Barron at ENtegrity Ag Solutions**

As well as:

- **Rob Dunn at FarmWise Inc.**
- **Quattro Farms Inc.**
- **SGS Laboratory**
- **Print Three**

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 at 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.
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 and management conditions. It's important to note that results may vary based on different environmental conditions, management practices, and variety genetic factors. Farm scale trials, as they stand, do not replace small plot research results. Rather, they add further context to the information developed through small-plot trials. 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.

Enhanced Efficiency Fertilizers

Assessing enhanced efficiency fertilizer on wheat yield and quality (St. Paul County)

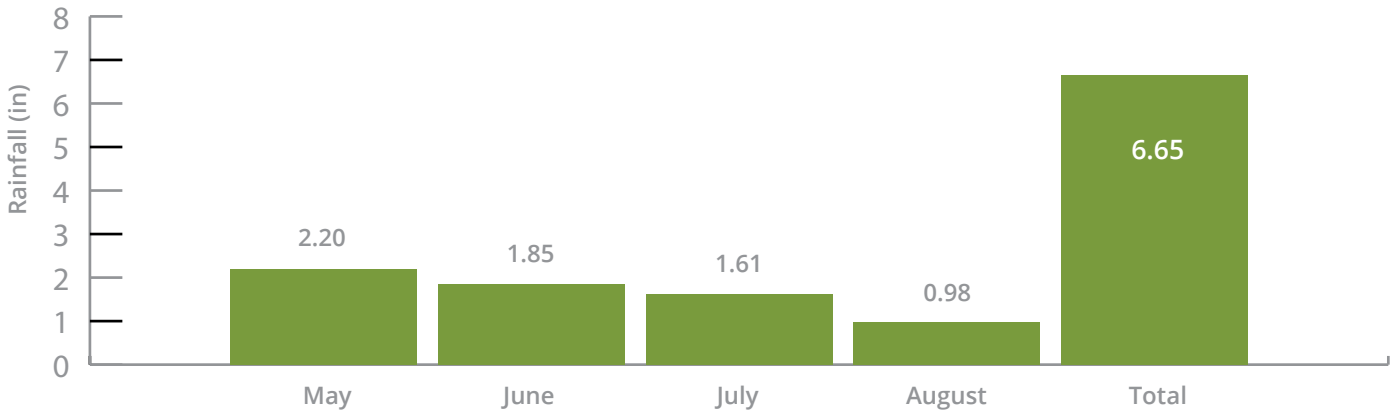
This trial was conducted with the agronomic support of Lakeland Applied Research Association

Closest Town: St Lina, Alberta
Soil type: Dark Grey Luvisol
Seeding Date: May 25, 2024
Harvest Date: September 20, 2024
Row Spacing: 10" (25.4 cm)
Variety(s): AAC Redstar CWRS wheat
Reps: Three
Previous Crop: Canola
Tillage: Harrowed in fall

Herbicides: Pre: Express PRO with 0.67L/ac Glyphosate
In-Crop: Travallas and Cirray
Seed Treatment: Insure Cereal FX4
Foliar Insecticides: None
Foliar Fungicides: Miravis Ace + NIS
Fertilizer: 100%: 162N-38P-38K-10S lbs nutrient/ac and 80%: 130N-38P-38K-10S lbs nutrient/ac
Irrigation: None

Rainfall:

Rainfall (in) at trial location from May through August, 2024



Introduction

Partnering with DSL Farms at St Lina, Alberta, this trial assessed the impact of enhanced efficiency fertilizer rates on yield and grain quality of CWRS wheat variety AAC Redstar. The trial was seeded using a Bourgault drill with 10" (25.4 cm) row spacings. Treatments were replicated and randomized.

Treatments

Trial design goal:
To determine the yield and grain quality impact of enhanced efficiency fertilizer on yield and quality of CWRS wheat production.

Treatment 1: Urea at 100%
Treatment 2: SuperU at 100%
Treatment 3: Urea at 80%
Treatment 4: SuperU at 80%

Results

There was a small but significant difference in protein between treatments, but no differences between yield or bushel weight. SuperU applied at 80% of full rate had higher protein than urea applied at 80% of full rate.

Table 1: Yield, and quality results comparing enhanced efficiency fertilizer to urea on the Canadian Western Red Spring (CWRS) variety AAC Redstar at St. Lina, Alberta, 2024.

	Plant Stand (plants/ft^2)		**Yield** (bu/ac)		**Protein** (%)		**Bushel Weight** (lbs/bu)	
Urea at 100%	34.1	a	46.8	a	15.7	ab	62.8	a
Super U at 100%	37.5	a	46.1	a	15.4	bc	63.1	a
Urea at 80%	34.6	a	47.4	a	15.4	c	*63.2*	a
SuperU at 80%	32.7	a	47.4	a	15.8	a	*63.0*	a
p-value	0.2383	NS	0.74	NS	***0.0398***	*	0.2947	NS
CV %	18.58	%	4.91	%	4.15	%	0.27	%

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

Summary

Drought conditions limited yield potential at this site and there was no difference in yield between 80% and 100% of agronomic N rates of either urea or SuperU fertilizer. SuperU at the 80% rate did significantly increase the grain protein content compared to urea at the 80% rate, achieving similar levels to the 100% urea treatment.

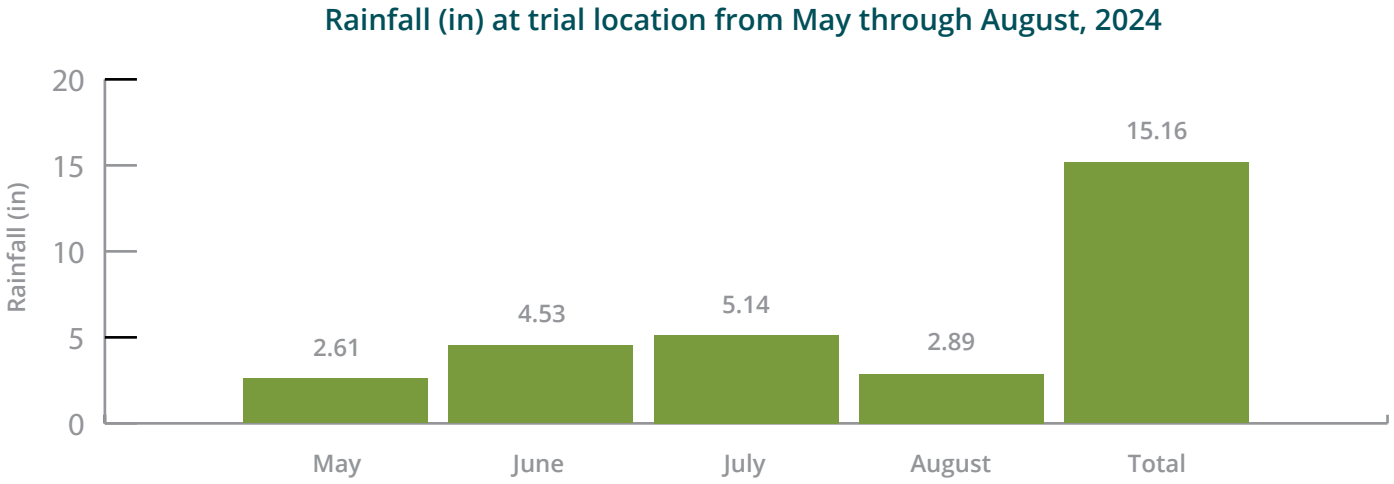
Assessing enhanced efficiency fertilizer on wheat yield and quality (Mountain View County)

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

Closest Town: Carstairs, Alberta
Soil type: Orthic Black Chernozem
Seeding Date: May 4, 2024
Harvest Date: September 4, 2024
Row Spacing: 10" (25.4 cm)
Variety(s): AAC Hodge VB
Reps: Three
Previous Crop: Spring Wheat
Tillage: Harrowed in spring

Herbicides: Pre: None
In-Crop: Cirpreme XV, MCPA Ester 600, Axial tank mix
Seed Treatment: Vibrance Quattro
Foliar Insecticides: None
Foliar Fungicides: TilMOR®
Fertilizer: Base rate of 100N-33P-9.5K lbs nutrient/ac
Irrigation: None

Rainfall:



Introduction

Partnering with Triple H Farms at Carstairs, Alberta, this trial assessed the impact of enhanced efficiency fertilizer rates on yield and grain quality for AAC Hodge VB CWRS wheat yield. The trial was seeded using a John Deere drill with 10" (25.4cm) row spacing and 4" paired-row dutch openers. Treatments were replicated and randomized.

Treatments

Trial design goal:
To determine the yield and grain quality impact of enhanced efficiency fertilizer on yield and quality of spring wheat production.

Treatment 1: Urea at 100% (107N-33P-9.5K lbs nutrient/ac)

Treatment 2: SuperU at 100% (107N-33P-9.5K lbs nutrient/ac)

Treatment 3: Urea at 80% (87N-33P-9.5K lbs nutrient/ac)

Treatment 4: SuperU at 80% (87N-33P-9.5K lbs nutrient/ac)

Results

In-crop assessment results

There was a small but significant difference between plant stand densities between fertilizer treatments (Table 1) where plant stands were slightly higher in the full N rate fertilizer treatments.

Yield results

There were no significant differences in yield between urea applied at 100%, SuperU applied at 100%, urea applied at 80%, or SuperU applied at 80% of full rate.

Grain quality results

There was no significant difference in protein between treatments. There was a small but significant difference between test weight in SuperU and urea at 80% compared to urea and SuperU at 100%.

Table 1: Plant stand, yield, and quality results comparing enhanced efficiency fertilizer to urea on the CWRS variety AAC Hodge VB at Carstairs, Alberta, 2024.

	Plant Stand (plants/ft²)		**Yield** (bu/ac)		**Protein** (%)		**Bushel Weight** (lbs/bu)	
Urea at 100%	23.7	a	64.6	a	11.7	a	64.3	b
Super U at 100%	23.7	a	64.1	a	11.7	a	64.7	b
Urea at 80%	22.3	b	64.3	a	11.3	a	64.9	ab
SuperU at 80%	22.0	b	66.7	a	10.8	a	65.8	ab
p-value	***0.0026***	*	0.5143	NS	0.2043	NS	***0.032***	*
CV %	3.93	%	4.18	%	5.57	%	1.00	%

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

Summary

Drought conditions during July limited yield potential at this site and there was no difference in yield between 80% and 100% of agronomic N rates of either urea or SuperU fertilizer. SuperU at the 80% rate did significantly increase the test weight content compared to other rates but only slightly.

Fungicide Trials

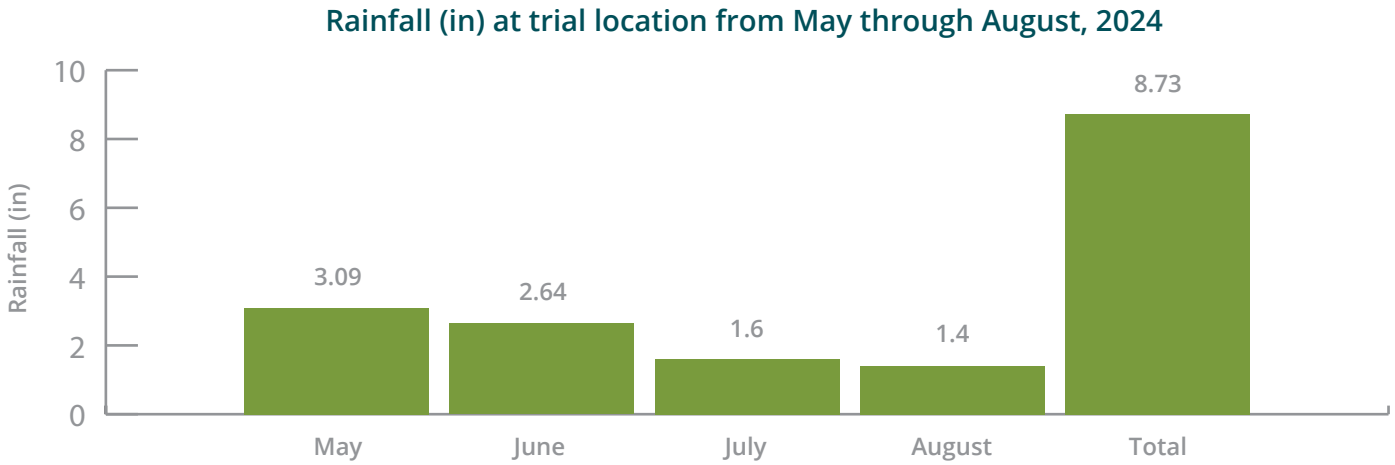
Assessing two fungicide timings on wheat yield and quality (Mackenzie County)

This trial was conducted with the agronomic support of Naveen Arora at Mackenzie Applied Research Association

Closest Town: Fort Vermilion, Alberta
Soil type: Dark Grey Luvisol
Seeding Date: May 11, 2024
Harvest Date: August 31, 2024
Row Spacing: 12" (30.5 cm)
Variety(s): CWRS AAC Viewfield
Reps: Four
Previous Crop: Canola
Tillage: Harrowing

Herbicides: Pre: Glyphosate
In-Crop: Axial
Seed Treatment: None
Foliar Insecticides: None
Foliar Fungicides: Miravis Ace + NIS
Fertilizer: 68N-30P-12K lbs nutrient/ac
Irrigation: None

Rainfall:



Introduction

Partnering with Boese Enterprises at Fort Vermilion, Alberta, this trial assessed the impact of two fungicide application timings on the yield and grain quality for CWRS wheat variety AAC Viewfield. The trial was seeded using a Bourgault twin shank drill with 12" (30.5cm) row spacings and 3/4" openers. Treatments were replicated and randomized. Target plant stand density was 35 plants/ ft2.

Treatments

Trial design goal:

To determine the yield and grain quality impacts of two different fungicide timings.

Treatment 1: Untreated check

Treatment 2: Flag leaf timing (BBCH 39) for Miravis Ace fungicide

Treatment 3: Head emergence timing (BBCH 61-63) for Miravis Ace fungicide

Results

In-crop assessment results

For plant stand counts ~ 21 days after seeding, an average plant stand count of 27.8 plants/ft2 was achieved.

Yield results

No significant yield differences were seen between fungicide treatment timing and the untreated check (Table 1).

Table 1: Plant stand counts, yield, and quality results comparing fungicide treatments (untreated, flag-leaf timing, and head emergence timing) for the CWRS wheat variety AAC Viewfield, at Fort Vermilion, Alberta, 2024.

	Plant Stand (plants/ft^2)		**Yield** (bu/ac)		**Protein** (%)		**Bushel Weight** (lbs/bu)	
Untreated Check	27.8		73.9	a	14.3	a	66.5	a
Flag leaf Timing	27.8		75.6	a	14.0	a	67.1	a
Heading Timing	27.8		75.5	a	14.0	a	66.8	a
p-value	NA		0.6732	NS	0.4897	NS	0.6455	NS
CV %	NA		7.56	%	3.07	%	1.39	%

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

Grain quality results

As with the yield results, no differences were seen in quality parameters including protein and test weight (Table 1).

Summary

Overall, no significant differences were seen in yield when applying fungicide at flag-leaf or at heading.

Assessing two fungicide timings on wheat yield and quality (Vermilion River County)

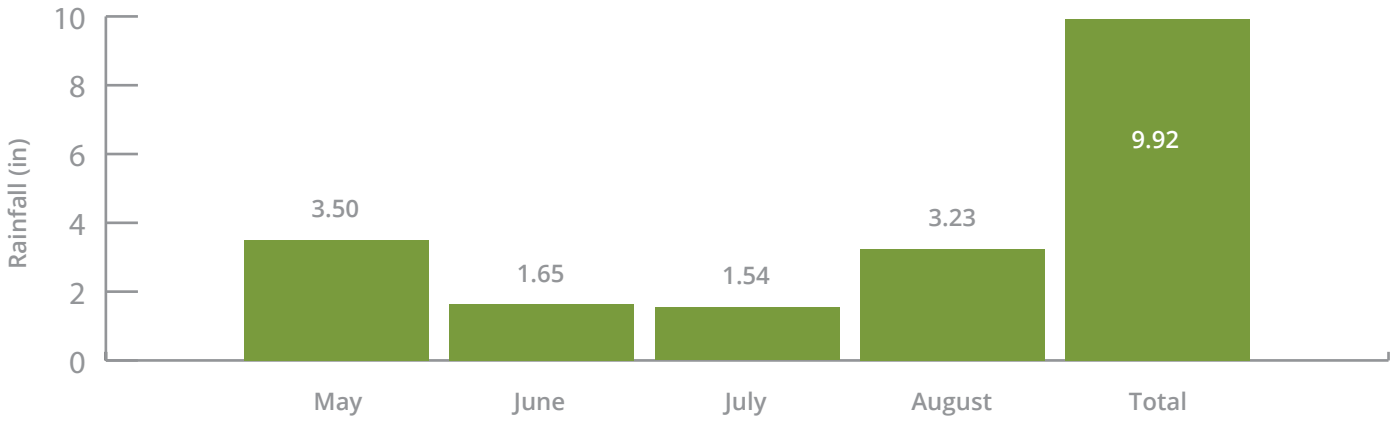
This trial was conducted with the agronomic support of Lakeland Applied Research Association

Closest Town: Vermilion, Alberta
Soil type: Black Chernozem
Seeding Date: May 5, 2024
Harvest Date: September 6, 2024
Row Spacing: 10" (25.4 cm)
Variety(s): AAC Hockley CWRS wheat
Reps: Four
Previous Crop: Canola
Tillage: No-till

Herbicides: Pre: Blitz at 40 mL/ac plus Smoke at 1 L/ac
In-Crop: Axial Xtreme at 0.5 L/ac + Broadside at 0.3 L/ac
Seed Treatment: Cruiser Vibrance Quattro
Foliar Insecticides: None
Foliar Fungicides: Miravis Neo
Fertilizer: 85N-20P-10K lbs nutrient/ac
Irrigation: None

Rainfall:

Rainfall (in) at trial location from May through August, 2024



Introduction

Partnering with Canola Farms at Vermilion, Alberta, this trial assessed the impact of two fungicide application timings on yield and grain quality for the CWRS wheat variety AAC Hockley. The trial was seeded using a drill with 10" (25.4 cm) row spacing. Treatments were replicated and randomized.

Treatments

Trial design goal:
To determine the yield and grain quality impacts of two different fungicide timings.

Treatment 1: Untreated check

Treatment 2: Early head emergence (BBCH 61) fungicide timing

Treatment 3: Late head emergence (BBCH 63) fungicide timing

Results

In-crop assessment results
An average of 33.7 plants/ft2 was achieved. Plant stand was measured ~ 35 days after seeding.

Yield results
No significant yield differences were seen between the two fungicide timings or the untreated check (Table 1).

Table 1: Plant stand counts, yield, and quality results comparing two fungicide timings (early head emergence and late head emergence) on the CWRS wheat variety AAC Hockley, at Vermilion, Alberta, 2024.

	Plant Stand (plants/ft²)		**Yield** (bu/ac)		**Protein** (%)		**Bushel Weight** (lbs/bu)	
Untreated check	33.5	a	57.4	a	13.58	b	66.6	a
Early Timing	34.8	a	61.2	a	13.93	a	66.2	a
Late Timing	32.8	a	58.6	a	13.63	ab	66.6	a
p-value	*0.2871*	*NS*	*0.6338*	*NS*	*0.0704*	*NS*	*0.5201*	*NS*
CV %	15.6	%	6.82	%	2.01	%	0.29	%

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

Grain quality results
Grain protein in the early timing treatment was significantly higher than in the untreated check, but there was no difference between the late timing treatment and other treatments (Table 1). There was no significant difference between treatments for bushel weight.

Summary

Overall, no significant differences were seen in yield when applying fungicide at early head emergence and late head emergence timing.

Assessing two fungicide timings on wheat yield and quality (Parkland County)

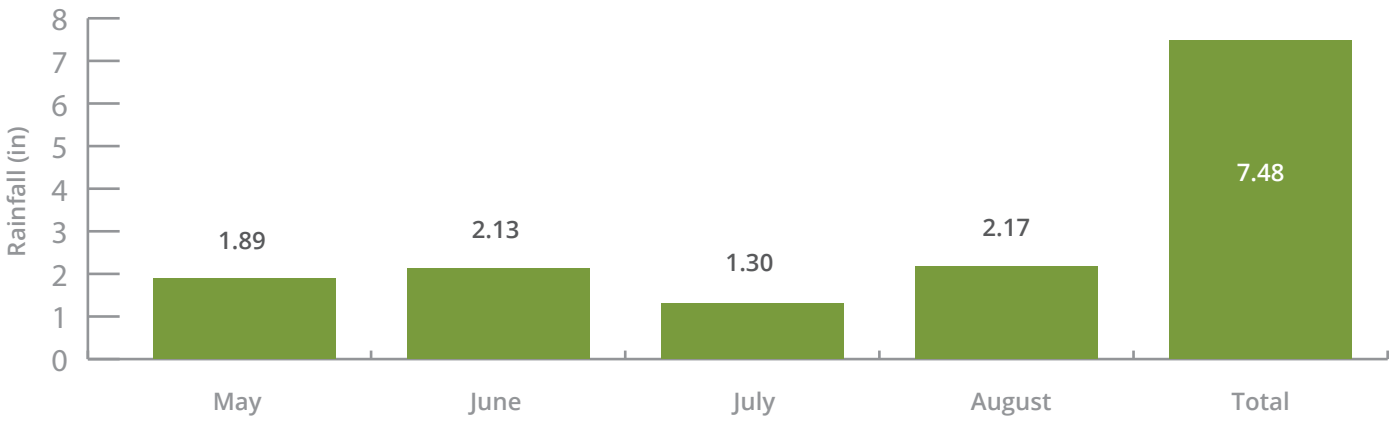
This trial was conducted with the agronomic support of Roger Barron, ENtegrity Ag

Closest Town: Stony Plain, Alberta
Soil type: Orthic Dark Grey Chernozem
Seeding Date: May 10, 2024
Harvest Date: August 26, 2024
Row Spacing: 12" (30.5 cm)
Variety(s): AAC Brandon CWRS wheat
Reps: Three
Previous Crop: Canola
Tillage: Vertical tillage in fall

Herbicides: **Pre:** Pre-pass and Glyphosate
In-Crop: Sierra, Talinor, Radiate
Seed Treatment: Raxil Pro
Foliar Insecticides: None
Foliar Fungicides: Miravis Ace (head emergence stage), Tilmor (flag leaf stage)
Fertilizer: 85N-30P-20K-10S
Irrigation: None

Rainfall:

Rainfall (in) at trial location from May through August, 2024



Introduction

Partnering with Blue J Farms Ltd. at Stoney Plain, Alberta, this trial assessed the impact of two fungicide application timings on yield and grain quality for the CWRS variety AAC Brandon. The trial was seeded using a John Deere P556 drill with 12" (30.5cm) row spacing. Treatments were replicated and randomized.

Treatments

Trial design goal:

To determine the yield and grain quality impacts of two different fungicide timings for AAC Brandon CWRS wheat.

Treatment 1: Flag-leaf timing (BBCH 39) (Tilmor)

Treatment 2: Flag-leaf timing (BBCH 39) + Head emergence timing (BBCH 61-63) (Tilmor and Miravis Ace)

Treatment 3: Untreated check

Treatment 4: Head emergence timing (BBCH 61-63) (Miravis Ace)

Results

In-crop assessment results

A plant density average of 29 plants/ft2 was achieved with no differences between treatments.

Yield results

No significant yield differences were seen between the two fungicide timings or the untreated check (Table 1).

Table 1: Plant stand counts, yield, and quality results from fungicide applications at flag-leaf timing, head emergence, and flag-leaf plus head emergence timing compared to a check on the CWRS wheat variety AAC Brandon, at Stony Plain, Alberta, 2024.

	Plant Stand (plants/ft^2)		**Yield** (bu/ac)		**Protein** (%)		**Bushel Weight** (lbs/bu)	
Check	28.3	a	26.9	a	19.4	a	56.7	a
Flag-leaf	29.0	a	26.9	a	19.2	a	56.3	a
Head emergence Timing	29.7	a	29.3	a	19.1	a	56.1	a
Flag-leaf and Head emergence Timing	29.0	a	30.3	a	19.2	a	57.2	a
p-value	*0.9646*	*NS*	*0.446*	*NS*	*0.8647*	*NS*	*0.5448*	*NS*
CV %	10.5	%	9.96	%	3.02	%	1.93	%

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

Grain quality results

As with the yield results, no differences were seen in quality parameters including protein and test weight (Table 1).

Summary

Overall, there were no significant differences in yield at this site when fungicide was applied at two different growth stages. Drought conditions in late spring to early summer at this site were a factor in disease development and response to fungicide.

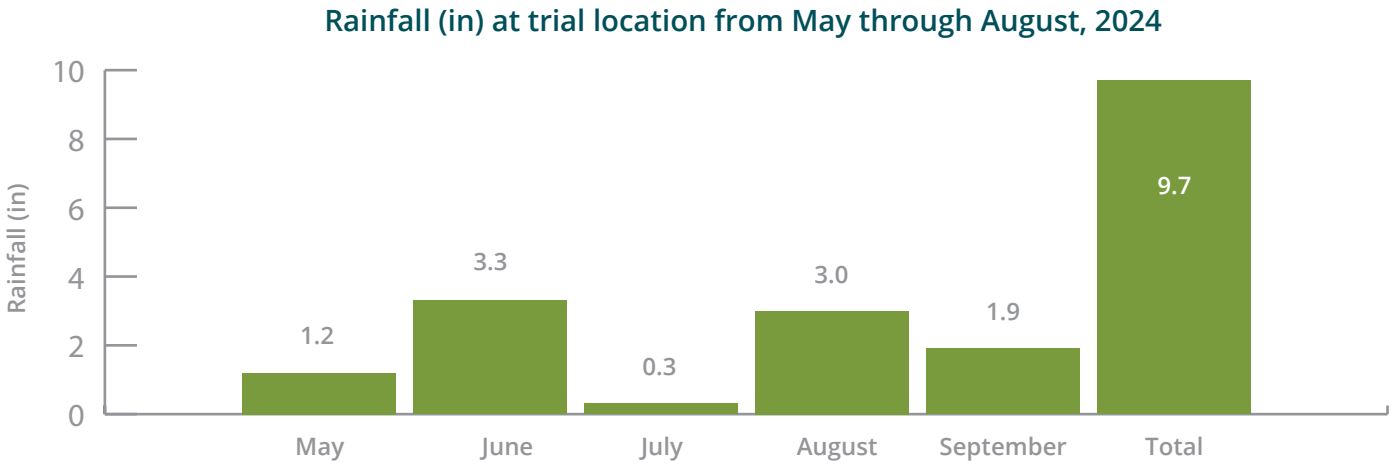
Assessing two fungicide timings on durum wheat yield and quality (Lethbridge County)

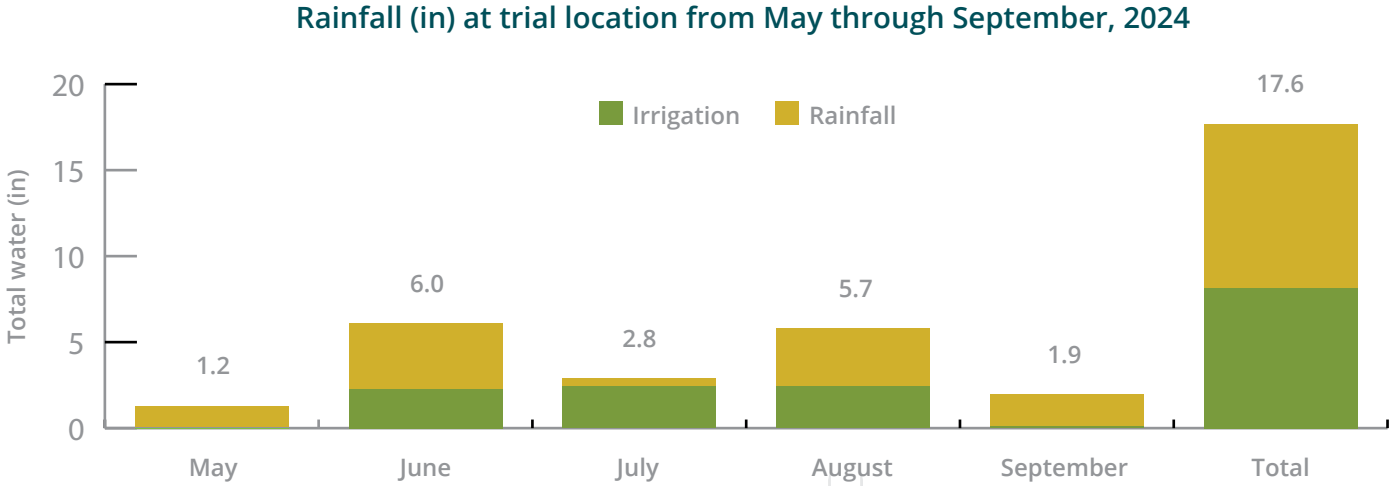
This trial was conducted with the agronomic support of Farming Smarter

Closest Town: Barons, Alberta
Soil type: Dark Brown Chernozem
Seeding Date: May 9, 2024
Harvest Date: September 28, 2024
Row Spacing: 10" (25.4 cm)
Variety(s): AAC Stronghold durum wheat
Reps: Three
Previous Crop: Peas
Tillage: Minimum till (anhydrous banded before seeding)

Herbicides: Pre: Glyphosate
In-Crop: Axial
Seed Treatment: Teraxxa F4
Foliar Insecticides: None
Foliar Fungicides: Miravis Ace + NIS
Fertilizer: 180N-30P-0K-20S lbs nutrient/ac (100 lbs N banded in early spring, 80 lbs N at seeding)
Irrigation: 7.5 inches applied in growing season

Rainfall:





Introduction

Partnering with Bishop Farms at Barons, Alberta, this trial assessed the impact of two fungicide timings on AC Stronghold durum wheat yield and grain quality. The trial was seeded using a disc drill with 10" (25.4cm) row spacing. Treatments were replicated and randomized.

Treatments

Trial design goal:

To determine the yield and grain quality impacts of two different fungicide timings.

Treatment 1: Untreated check

Treatment 2: Flag-leaf timing (BBCH 39)

Treatment 3: Head emergence timing (BBCH 61-63)

Results

In-crop assessment results

Plant density average of 23.6 plants/ft2 was achieved. The target rate was 25 plants/ft2.

Yield results

No significant yield differences were seen between the two fungicide timings or the untreated check (Table 1).

Table 1: Plant stand counts, yield, and quality results comparing fungicide application timing at flag leaf and head emergence to an untreated check for AC Stronghold durum wheat, at Barons, Alberta, 2024.

	Plant Stand (plants/ft^2)		**Yield** (bu/ac)		**Protein** (%)		**Bushel Weight** (lbs/bu)	
Untreated Check	26.0	a	121.6	a	13.8	a	63.9	a
Flag-leaf Timing	22.7	a	120.2	a	14.2	a	63.0	a
Heading Timing	22.0	a	127.2	a	13.9	a	64.7	a
p-value	*0.1326*	*NS*	*0.1151*	*NS*	*0.0096*	*NS*	*0.0677*	*NS*
CV %	11.05	%	4.03	%	2.09	%	1.79	%

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

Grain quality results

No differences were seen in protein and test weight quality parameters (Table 1), however the amount of hard vitreous kernels was significantly different between treatments (data not shown), with HVK being higher in the heading timing fungicide application.

Summary

Overall, no significant differences were seen in yield when applying fungicide at flag-leaf or heading timing.

Humic Acid

Assessing humic acid rates on wheat yield and quality (Westlock County)

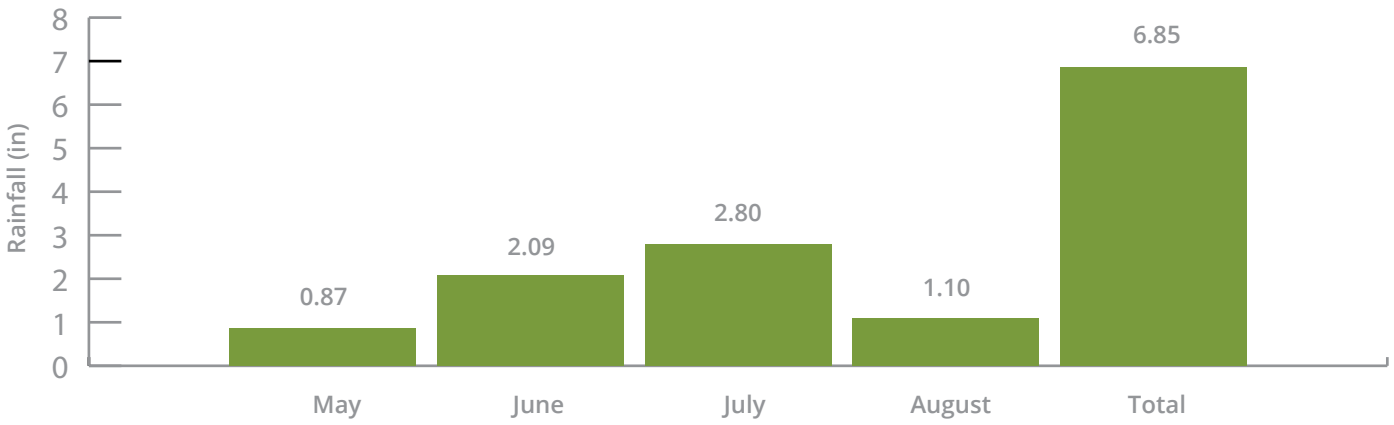
This trial was conducted with the agronomic support of Gateway Research Organization.

Closest Town: Westlock, Alberta
Soil type: Dark Grey Chernozem
Seeding Date: May 12, 2024
Harvest Date: September 8, 2024
Row Spacing: 12" (30.5 cm)
Variety(s): AAC Connery
Reps: Four
Previous Crop: Peas
Tillage: Lemken with basket in fall, heavy harrow in spring

Herbicides: Pre: None
In-Crop: Everest 3.0 AG + Cirpreme XC + Liberate
Seed Treatment: Vibrance Quattro
Foliar Insecticides: None
Foliar Fungicides: None
Fertilizer: 85N-26P-30K-12S lbs nutrient/ac, Nexus Copper @ 1L/ac at herbicide timing
Irrigation: None

Rainfall:

Rainfall (in) at trial location from May through August, 2024



Introduction

Partnering with Punko Farms at Westlock, Alberta, this trial assessed the impact of two humic acid application rates on AAC Connery wheat yield and grain quality. The trial was seeded using a John Deere Conserva Pak drill with 12″ (30.5cm) row spacings and 3″ paired row openers. Humic acid was applied post-planting, pre-emergence. Treatments were replicated and randomized.

Treatments

Trial design goal

To determine the yield and grain quality impacts of humic acid application on yield and quality of spring wheat production.

Treatment 1: Check

Treatment 2: 4 L/ac liquid humic acid

Treatment 3: 2L/ac liquid humic acid

Results

Application of low and high rates of liquid humic acid had no effect on yield or quality parameters (Table 1) except for fusarium damaged kernels (FKD) and midge affected kernels (data not shown). Application of liquid humic acid decreased fusarium damaged kernels. Levels of midge affected kernels were different between all three treatments.

Table 1: Plant stand, yield, and quality results comparing 4L/ac and 2L/ac of liquid humic acid to an untreated check on the CWRS variety AAC Connery at Westlock, Alberta, 2024.

	Plant Stand (plants/ft²)		**Yield** (bu/ac)		**Protein** (%)		**Bushel Weight** (lbs/bu)	
Check	22.3	a	61.8	a	14.9	a	65.8	a
Liquid Humic at 4L/ac	22.0	a	57.2	a	15.5	a	65.2	a
Liquid Humic at 2L/ac	20.8	a	62.0	a	15.1	a	65.4	a
***p*-value**	*0.6162*	*NS*	*0.1561*	*NS*	*0.7757*	*NS*	*0.673*	*NS*
CV%	10.48	%	6.36	%	7.81	%	1.65	%

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

Summary

Application of liquid humic acid at two different rates had no impact on yield and quality of spring wheat.

Plant Growth Regulators

Assessing plant growth regulator on wheat yield and quality (Mackenzie County)

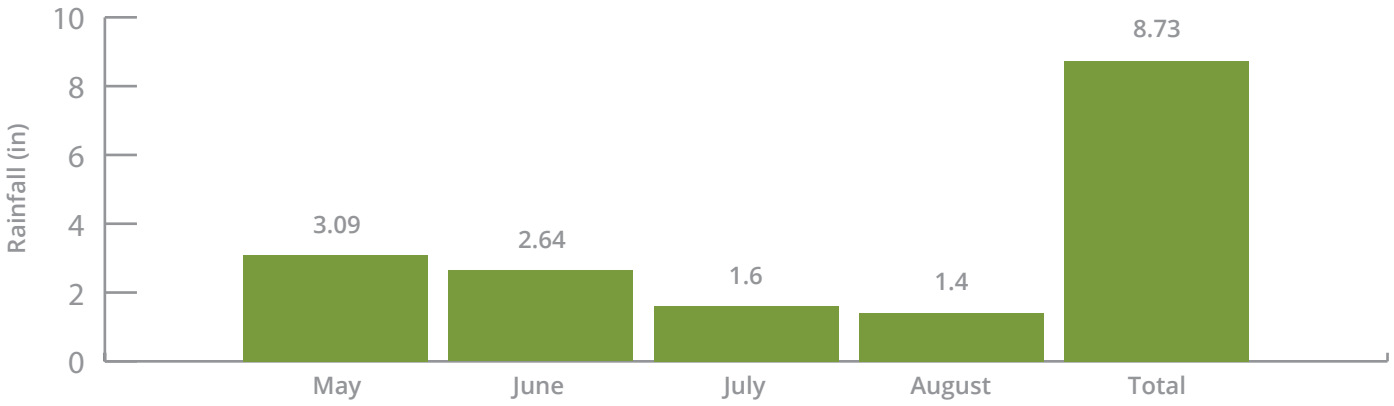
This trial was conducted with the agronomic support of Mackenzie Applied Research Association

Closest Town: Fort Vermilion, Alberta
Soil type: Dark Grey Luvisol
Seeding Date: May 11, 2024
Harvest Date: August 31, 2024
Row Spacing: 12" (30.5 cm)
Variety(s): AAC Viewfield CWRS wheat
Reps: Four
Previous Crop: Canola

Tillage: No-till
Herbicides: Pre: Glyphosate
In-Crop: Axial
Seed Treatment: None
Foliar Insecticides: None
Foliar Fungicides: Miravis Ace + NIS
Fertilizer: 68N-30P-12K lbs nutrient/ac
Irrigation: None

Rainfall: None

Rainfall (in) at trial location from May through August, 2024



Introduction

Partnering with Boese Enterprises at Fort Vermilion, Alberta, this trial assessed the impact of plant growth regulator on yield and grain quality for CWRS wheat variety AAC Viewfield. The trial was seeded using a Bourgault twin shank drill with 12" (30.5cm) row spacings and 3/4" openers. Manipulator plant growth regulator applied GS 30-32 using a 100 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: Manipulator™ 620 applied at GS 30-32 @ 0.7L/ac

Treatment 2: Untreated check

Results

In-crop assessment results

Plant stand density was 24.5 plants/ft2.

Yield results

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

The lack of differences seen in yield and quality indicate that growing conditions at this trial site were not conducive to see a benefit from the application of a PGR.

Grain quality results

Table 1: Yield, and quality results comparing Manipulator™ 620 to an untreated check on the CWRs wheat variety AAC Viewfield at Fort Vermilion, Alberta, 2024.

	Plant Stand (plants/ft²)		**Yield** (bu/ac)		**Protein** (%)		**Bushel Weight** (lbs/bu)	
Manipulator™ 620	24.5		83.0	a	13.6	a	69.0	a
Check	24.5		81.9	a	13.6	a	68.6	a
p-value	*NA*		*0.5742*	*NS*	*0.9123*	*NS*	*0.5063*	*NS*
CV%	NA		5.98	%	4.03	%	1.01	%

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

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 Viewfield has a lodging rating of 'Very Good'. While there was some lodging at this site, no difference was observed between treatments. Lodging or poor growth in the trials occurred across all treatments or outside the trial area. After aerial imagery analysis comparing 2024 to previous years, crop growth patterns indicated inherent soil variability across the trial site as a potential cause of lodging or poor growth (Figure 1).

Figure 1. *Drone imagery at harvest of PGR trial, showing poor growth across treatments. Photo courtesy Naveen Arora,* MARA.

References:

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

Seeding Rate Trials

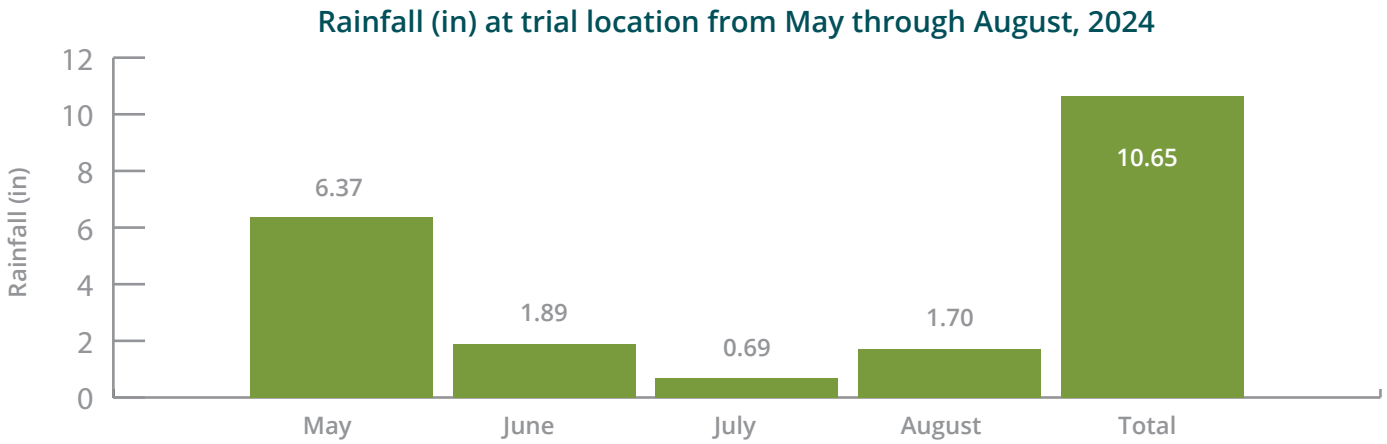
Comparing the effect of durum seeding rates on dryland yield and quality (Lethbridge County)

This trial was conducted with the agronomic support of Joshua Leffers at Living Soil Agronomy

Closest Town: Stirling, Alberta
Soil type: Dark Brown Chernozem
Seeding Date: April 23, 2024
Harvest Date: September 7, 2024
Row Spacing: 10" (25.4cm)
Variety(s): AAC Schrader durum wheat
Reps: Four
Previous Crop: Lentil
Tillage: No-till

Herbicides:
Fall Burn-off: Glyphosate, Intruvix A and B, SZ-75
Pre: None
In-Crop: Barricade II + Simplicity
Seed Treatment: Terraxa
Foliar Insecticides: None
Foliar Fungicides: None
Fertilizer:Variable rate nutrient with target actual soil + applied at 125N-50P-0K lbs nutrient/ac
Irrigation: None

Rainfall:



Introduction

Partnering with Mercer Seeds at Stirling, Alberta, this trial compared three different seeding rates on the durum wheat variety, AAC Schrader. The trial was seeded using a Bourgault disc drill with 10" (25.5cm) row spacing. Seeding rates to target plant stand treatments were determined using thousand kernel weight, germination percentage and farm-specific emergence mortality estimates. The thousand kernel weight of the seed lot was 37.3 g. Seeding rates to attain the treatment target plant stands of 20 (treatment 1), 25 (treatment 2), 30 (treatment 3) and 35 plants/ft2 (treatment 4) were 84, 104, 124, and 144 lbs of seed ac-1, respectively. Treatments were replicated and randomized.

Treatments

Trial design goal:
To determine the yield and grain quality impacts of seeding rates on durum wheat.

Treatment 1: Target 20 plants/ft2
Treatment 2: Target 25 plants/ft2
Treatment 3: Target 30 plants/ft2
Treatment 4: Target 35 plants/ft2

Results

In-crop assessment results

Mean target plant densities were within 10% of desired densities for the 20, 25, and 30 plants/ft2 targets and 12% for the 35 plants/ft2 target. However, in-field variability resulted in no significant differences between plant stand treatments.

Yield results

No significant yield differences were seen between target plant stand treatments (Table 1).

Table 1: Plant stand counts, yield, and quality results comparing four target plant stands (20 plants/ft2, 25 plants/ft2, 30 plants/ft2, and 35 plants/ft2) in the durum variety, AAC Schrader, at Stirling, Alberta, 2023.

Variety	Plant Stand (plants/ft²)		Yield (bu/ac)		Protein (%)		Bushel Weight (lbs/bu)	
20 plants/ft2	21.6	a	55.0	a	13.0	ab	64.7	a
25 plants/ ft2	23.7	a	51.9	a	13.2	a	65.0	a
30 plants/ ft2	29.0	a	54.8	a	13.1	ab	65.1	a
35 plants/ft2	31.0	a	53.0	a	12.8	b	65.0	a
p-value	0.1796	NS	0.2232	NS	0.1335	NS	0.2123	NS
CV %	20.57	%	4.44	%	1.85	%	0.29	%

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

Grain quality results

There was a significant difference in protein between 25 plants/ft2 at 13.2% and 35 plants/ft2 at 12.8%. There were no differences in test weight between treatments (Table 1).

Summary

Overall, no significant differences were seen in yield when increasing seeding rates. This contrasts research seen in small plot research which demonstrates an increase in yield when seeding rate was increased (Beres et al, 2011, Collier et al, 2021).

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

Field Days

A special thanks goes out to Quattro Farms and Farming Smarter for hosting a field day on June 19, 2024 at Bow Island, AB. The agenda included on-farm research goals and experiences, enhanced efficiency fertilizer research and local agronomic research results.

An additional field day was held by Mackenzie Applied Research Association on July 26, 2024 at Fort Vermilion, AB. The event brought together MARA staff and farmers to tour the Plot2Farm trials in the area.

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Notes

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