SASKATCHEWAN ON-FARM RESEARCH TRIALS 2025

SaskBarley

SASK OILSEEDS

SASKATCHEWAN pulse Growers

Sask Wheat DEVELOPMENT COMMISSION

Acknowledgments

SaskOilseeds, Sask Wheat, SaskBarley and Saskatchewan Pulse Growers

wish to acknowledge and thank the grower cooperators and agronomists around the province for their time and efforts in conducting this year's on farm trials. Without your participating, these trials and the valuable data gained from them would not be possible.

A special thanks to

Kayla Slind

from the Western Applied Research Corporation (WARC).

Kayla Slind was Project Lead for each program, consisting of the organization, management, statistical analysis, interpretation and reporting for each trial.

Stats 101

Standard Error Difference (SED) is a measure of how much variability (same units as mean) you would expect in the difference between sample means if you repeated the experiment several times. The Least Significant Difference (LSD) is approximately 2 times the SED.

The P-value is a measure used to determine the statistical significance of results. It is a probability value derived from statistical analysis. A P-value less than 0.05 suggests that the results are statistically significant, while a P-value greater than 0.05 indicates that the results are not significant.

P < 0.05: There is a 95% probability (19 out of 20 times) that the observed difference is due to the treatment rather than random variation.

P < 0.1: There is a 90% probability (9 out of 10 times) that the difference is due to the treatment effect.

P > 0.1: There is a higher likelihood that the observed difference is due to random variability rather than the treatment.

Yield variability is common across different strips within an on-farm trial due to natural differences in the field. Therefore, when analyzing the yield data from each trial strip at the end of the season, the key question is whether the observed yield differences are due to inherent field variability or if they are the result of the treatment or management practice being tested. If the results are statistically significant, we can confidently attribute the yield difference to the treatment or management practice. If the results are not significant, any yield variation is likely due to field variability rather than the effect of the treatment or management practice.

Letter labels are often used in the results of statistical tests, to indicate whether groups are significantly different from each other. Since A and AB share the same letter, it means there is no significant difference between those two treatments. However, A and B have different letters, which means there's a statistically significant difference in their yields. Examples: If two groups share the same letter (e.g., A and AB), it suggests that their difference is not statistically significant—they are similar. If groups have different letters (e.g., A and B), it indicates that the difference between those groups is statistically significant.

Significant:

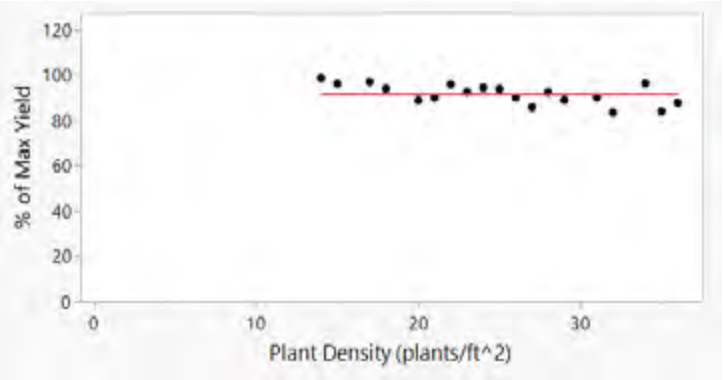
Data points are spread out and circles don't overlap.

Not Significant:

Data points and therefore, circles are very close or overlap. Indicates means were the same between treatments, resulting in insignificance.

Linear Regression:

Used in the seeding rate protocols, it fits a straight line through data points that best represents the data points. It is important to focus on the line more so than the individual data points. Here you can see the line is very linear/straight – showing that plant density had little effect on % max of yield.



As plant density increases, the percent of maximum yield decreases by about 0.43% per unit increase in plant density.

R^2 or R-squared explains how well a model fits the data. It ranges from 0 to 1 (or 0% to 100%), and shows the proportion of variability in the % of Max Yield that can be explained by X.

- R^2 = 0.00 → the model explains none of the variation
- R^2 = 0.25 → the model explains 25% of the variation
- R^2 = 0.80 → the model explains 80% of the variation

Higher R^2 = the line fits the data better.

The R^2 of 0.417 indicates that about 42% of the variability in % maximum yield is explained by plant density. Thus, the relationship is weak and should not be interpreted with certainty, as other factors are influencing yield.

y= 102.33 - 0.4296x

p = 0.0028

R^2= 0.417

Indicates significance.

The line is straight because the model is linear. Its significance comes from the slope being consistently different from zero, not from steepness or curvature.

Non- linear Regression:

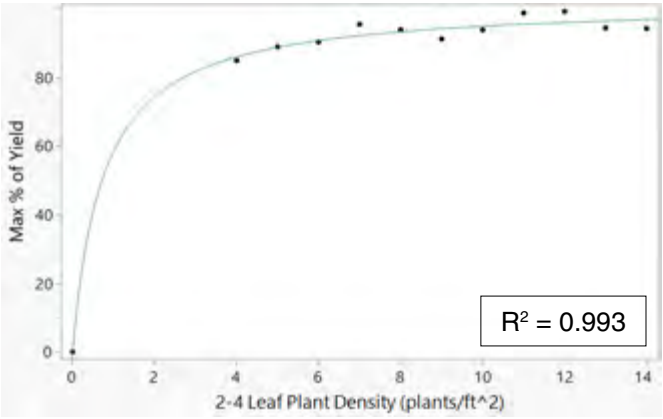
Non-linear regression is used when the relationship between two variables does not follow a straight line.

In very simple terms:

As one variable changes, the other changes in a curved or uneven way rather than increasing or decreasing at a constant rate.

Unlike linear regression:

- The effect is not the same at all values
- The relationship may level off, peak, or curve



Economics:

For the purposes of this book, even when insignificant, economics were still ran based on average yields. It is important to note though, that if yield was significant, the untreated check or standard would be classified the most economical. Lastly, for the seeding rate trials, economics were conducted based on the average yields for each seeding rate, to fully encompass the input cost that producer would have fronted, regardless of plant densities that were achieved in the field.

the BarleyBin Field Lab

by SaskBarley

Overview

SaskBarley launched the BarleyBin Field Lab in 2023 in an effort to collaborate with producers, agronomists, researchers and other crop commissions to adapt small plot research for use on the farm.

We support close collaboration with our Field Lab participants to identify challenges and develop protocols that are unique to their growing practices, disease pressures, soil zones and climate region.

The purpose of the Field Lab is to take the most impactful results from small-plot trials and implement them at field scale – providing more concrete data from a real-world setting. The results will also inform barley production and agronomic strategies for producers across the prairies.

In 2023, SaskBarley's BarleyBin Field Lab consisted of 1 protocol with 2 sites. And now, in 2025 it included 13 sites with six protocols offered with three protocols tested this season. SaskBarley will continue the BarleyBin Field Lab in 2026, collaborating with producers and agronomists to adapt research for use on the farm.

Protocol: Fine Tuning Barley Seeding Rates

Protocol: Optimizing Barley Fertility

Protocol: Incorporating Plant Growth Regulators on Saskatchewan Barley Farms

Protocol: High Yielding Barley with Alternative Seeding Implements

Protocol: Exploring New Barley Varieties

Protocol: Harvest Weed Seed Control in Barley

the BarleyBin Field Lab
Brought to you by SaskBarley

Fine Tuning Barley Seeding Rates

The recommended seeding rate for malt barley is 300 live seeds/m^2, which corresponds to a plant density in the range of approximately 20-22 plants/ft^2. Researchers found that 300 live seeds/m^2 optimized agronomics including yield and lodging, as well as malt characteristics including protein and plump kernels.

Objective

To optimize barley seeding rates based on target plant density to balance seed costs, yield, crop competitiveness and stand management.

Treatments

Seeding rates vary by site and year, but generally target three plant populations:

1)	Low Rate: Target 21 plants/ft^2
2)	Standard Fixed Rate: Target 25 plants/ft^2
3)	High Rate: Target 29 plants/ft^2
4)	Standard Variable Rate (VR): Target 21-24 plants/ft^2 based on field position (Optional)

For each treatment, seeding rate is adjusted to account for seed weight (TKW) and germination, as well as expected mortality. The treatments are replicated a minimum of four times, for a total of 12-16 plots. Apart from seeding rates, all plots were managed the same agronomically.

Data collected

- Seed test
- Spring soil test
- In-season plant density, at the 2-4 leaf stage, by landscape position within plots, if applicable
- Height and lodging at the soft dough to late dough stage
- Field history and management practices
- Yield by plots
- General in-season observations such as weed competition, disease susceptibility, standability, and maturity
- Weather data

Terminology

Treatments: actual seeding rates applied by the producer at time of seeding

Density Groups: grouped according to plant counts conducted in the field

Density Groups	Plant Density (plants/ft^2)
Very Low Rate	11-15
Low Rate	16-20
Standard Rate	21-25
High Rate	26-30
Very High Rate	32+

The following footnotes will be referred to for the combined and individual site reports for this protocol:

[1]SED is a measure of how much variability (same units as mean) you would expect in the difference between sample means if you repeated the experiment several times. The Least Significant Difference (LSD) is approximately 2 times the SED.

[2]A linear regression was used to assess the effects of varieties on the response variables. The data was also analyzed using the Mixed Model procedure in JMP with replicate considered random and seeding rate considered a fixed effect. Treatment means were separated using Least Significant Difference (LSD) test. All treatment effects and differences between means were considered significant at $p \leq 0.05$. However, p-values of 0.05-0.1 may also be acknowledged.

$P < 0.05$: There is a 95% probability (19 out of 20 times) that the observed difference is due to the treatment rather than random variation.
$P < 0.1$: There is a 90% probability (9 out of 10 times) that the difference is due to the treatment effect.
$P > 0.1$: There is a higher likelihood that the observed difference is due to random variability rather than the treatment.

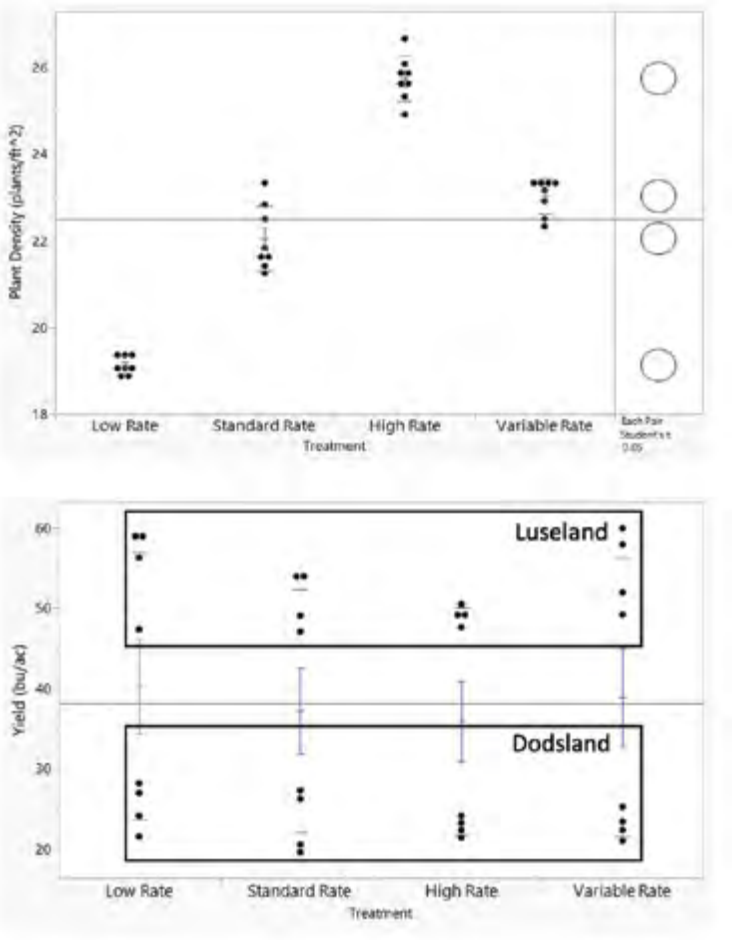
2023 Combined Results (2 sites)

Treatment – Seeding Density	Plant Density (plants/ft²)	Survival (%)	Height (cm)	Yield bu/ac)
Low Rate – 21 plants/ft²	19 d	91.1 a	75.3 a	40.3 a
Standard Rate – 25 plants/ft²	22 c	88.2 b	75.2 a	37.2 a
High Rate – 29 plants/ft²	26 b	88.8 b	73.5 a	35.9 a
Variable Rate – 29 plants/ft²	23 a	79.4 c	75.4 a	38.9 a
SED[1]	0.280	1.08	0.935	1.77
p-value[2]	<.0001	<.0001	0.162	0.107

Treatment	Test Weight (TW) (kg/hL)	Protein (%)	Plumps (%)	Thins (%)
Low Rate	59.1 a	13.1 c	83.4 a	1.1 a
Standard Rate	56.7 a	14.3 a	77.8 b	1.7 a
High Rate	57.1 a	14.0 ab	76.3 b	1.6 a
Variable Rate	58.1 a	13.6 bc	78.8 b	1.4 a
SED[1]	0.902	0.300	1.76	0.222
p-value[2]	0.069	0.0097	0.005	0.116

Data from 2023* were pooled to evaluate the overall effect of seeding rate on barley performance. Increasing seeding rates significantly increased plant density and decreased seedling survival. The variable seeding rate treatment resulted in the lowest seedling mortality; however, it still produced the second-highest plant density and yield among treatments. Although not all treatment differences were statistically significant, the low seeding rate achieved the highest yield in drought conditions, indicating it was the most cost-effective option (economic data not shown). Analyses were conducted using seeding density, as plant density was consistent across treatments. Examination of the yield data clearly shows that location had a dominant influence on yield.

*2023 data was reanalyzed in 2025 to be consistent with revised statistical techniques used in the 2025 growing season



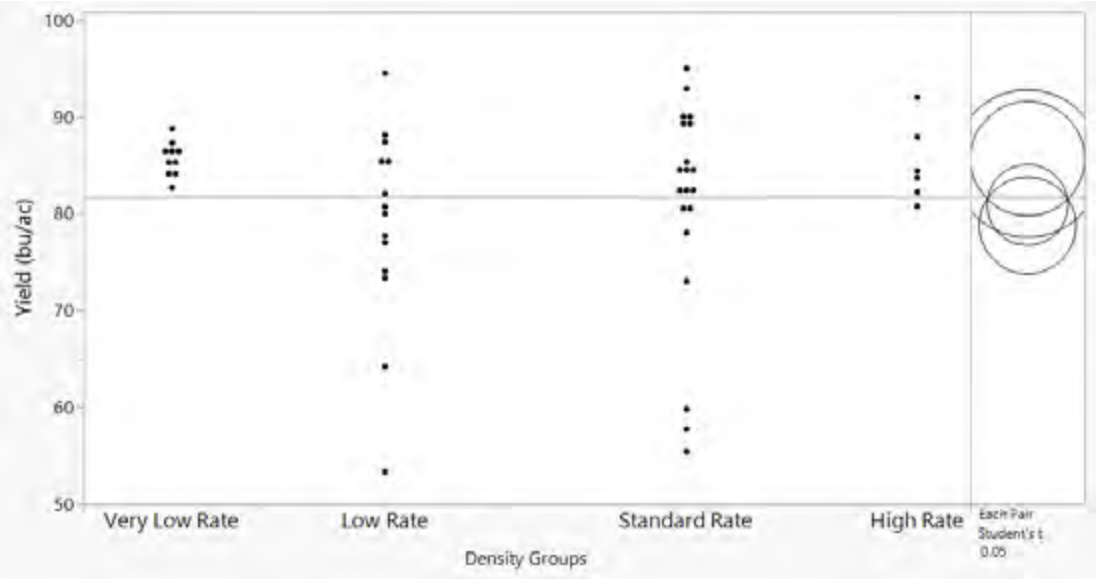
2024 Combined Results (5 sites)

Data from all 2024* sites were combined with applied treatments (seeding density) to assess the effects on plant density and survival. Next, density groups were used, grouping treatments based on observed plant density as plants per square foot rather than by assigned seeding rate. Grouping treatments by observation results in different total observations for each density group, as observed in the chart. This method was used for yield and grain quality analysis. Overall, aside from plant density and survival, no other significant treatment effects were observed.

*2024 data was reanalyzed in 2025 to be consistent with revised statistical techniques used in the 2025 growing season

Treatment – Seeding Density	Plant Density (plants/ft^2)	Survival (%)
Low Rate – 20-21 plants/ft^2	19 c	88.2 a
Standard Rate – 24-25 plants/ft^2	20 b	82.9 b
High Rate – 29-30 plants/ft^2	23 a	79.0 b
SED[1]	0.569	1.87
p-value[2]	0.0015	0.004

Density Group	Yield (bu/ac)	Thousand Kernel Weight (TKW) (g/1000)	Test Weight (TW) (kg/hL)	Protein (%)	Plumps (%)	Thins (%)	Germ (%)
Very Low Rate	81.3 a	43.7 a	59.4 a	12.7 a	93.1 a	2.0 a	99.6 a
Low Rate	82.2 a	42.6 a	59.8 a	12.6 a	93.7 a	1.6 a	99.5 a
Standard Rate	83.5 a	42.0 a	59.6 a	12.5 a	93.3 a	1.7 a	99.6 a
High Rate	76.7 a	40.9 a	58.0 a	12.8 a	92.1 a	2.0 a	99.8 a
SED[1]	1.90	1.20	0.963	0.260	2.04	0.257	0.368
p-value[2]	0.209	0.616	0.555	0.739	0.864	0.430	0.808



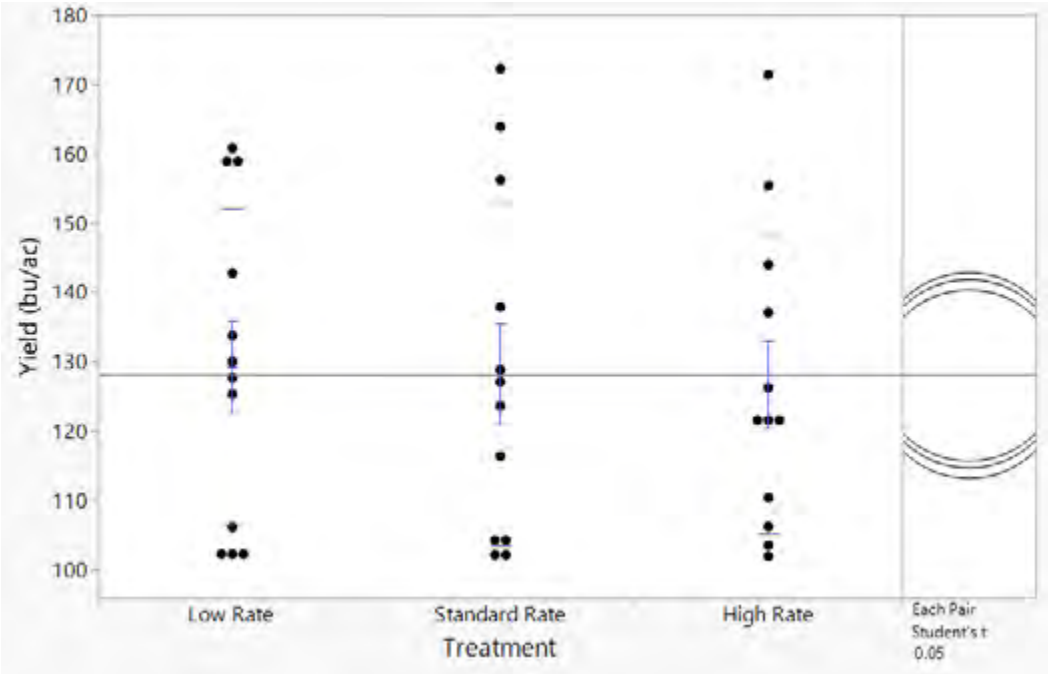
2025 Combined Results (3 sites)

3 out of the 4 sites in 2025 varying seeding rate did not result in significant differences in crop establishment, growth, lodging, yield, or seed quality. In 2025*, the observed plant density was consistent with the target seeding density, so analysis was conducted based on applied treatments. Although plant density increased numerically from 20 to 24 plants/ft² with higher seeding rates and survival declined slightly, these trends were not statistically significant. Plant height and lodging scores were consistent across treatments, reflecting similar stand structure and crop stability. Grain yield was also unaffected, remaining comparable across treatments at 126.7 to 129.2 bu/ac. Seed quality was likewise stable across seeding rates, with no significant differences observed in thousand kernel weight, test weight, protein, plumps, thins, or germination. Overall, the non-significant p-values ($p \geq 0.17$) indicate that low, standard, and high seeding rates delivered comparable agronomic performance and seed quality under the conditions of this trial.

*Naicam was excluded from the combined data due to differing treatments.

Treatment – Seeding Density	Plant Density (plants/ft²)	Survival (%)	Height (cm)	Lodging (1= erect, 9= flat)	Yield (bu/ac)
Low Rate – 21 plants/ft²	20 a	93.4 a	96.9 a	2.5 a	129.2 a
Standard Rate – 24 plants/ft²	22 a	89.7 a	95.3 a	2.9 a	128.2 a
High Rate – 29 plants/ft²	24 a	81.4 a	93.7 a	3.3 a	126.7 a
SED[1]	1.69	6.18	1.92	0.569	2.22
p-value[2]	0.193	0.255	0.399	0.694	0.572

Treatment	Thousand Kernel Weights (TKW) (g/1000)	Test Weight (TW) (kg/hL)	Protein (%)	Plumps (%)	Thins (%)	Germ (%)
Low Rate	49.0 a	62.6 a	11.6 a	97.5 a	0.7 a	97.4 a
Standard Rate	48.5 a	63.0 a	11.8 a	97.8 a	0.7 a	97.1 a
High Rate	47.6 a	62.1 a	11.6 a	97.2 a	0.7 a	95.9 a
SED[1]	0.559	0.393	0.169	0.428	0.046	0.805
p-value[2]	0.170	0.181	0.571	0.465	0.316	0.257



2023 – 2025 Combined (11 sites)

Notes on Combined Analysis:

Plant density and survival were analyzed based on applied seeding density.

In order to equally compare all sites, the data from each site was standardized before comparisons were made. Each sites highest parameter (max) (yield, TKW, TW, protein or moisture) was standardized to 100% then the remaining plots were calculated relative to the maximum.

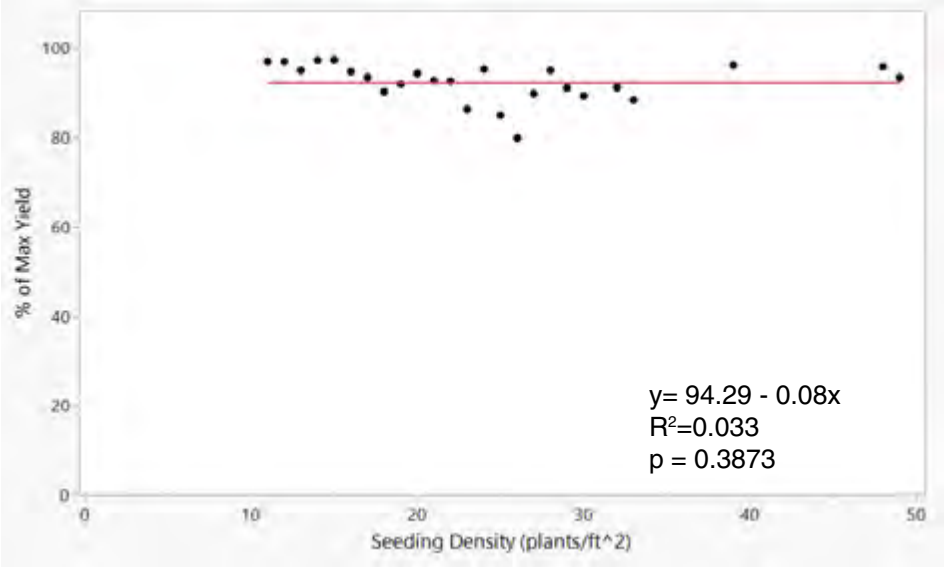
Example:

Plant Density (plants/ft^2)	Yield	Calculation	Yield (% of Max)
21	99.3	(99.3/102.9)*100	96.5
24	102.9	(102.9/102.9)*100	100.0
29	98.2	(98.2/102.9)*100	95.4

Every site from 2023, 2024 and 2025 was included in the combined analysis. Plant density increased significantly with increasing seeding density. The very low seeding rate resulted in higher plant densities than the low rate, which can be attributed to higher survival. No additional parameters other than yield, were evaluated due to missing data across years.

Treatment – Seeding Density	Plant Density (plants/ft^2)	Survival (%)
Very Low Rate – 19-20 plants/ft^2	21 cd	102.3 a
Low Rate – 21 plants/ft^2	20 d	92.7 ab
Standard Rate – 24-26 plants/ft^2	22 c	89.2 b
High Rate – 29-30 plants/ft^2	24 b	84.0 c
Very High Rate – 33+ plants/ft^2	37 a	91.3 abc
SED[1]	1.11	4.29
p-value[2]	<.0001	0.0014

When comparing percent to the maximum yield achieved, plant density had an insignificant effect. Plant densities ranging from 11 to 43 plants/ft^2 produced similar yields.



Key Takeaway: Over 3 years and 10 sites, plant densities ranging from 11 to 43 plants/ft^2 produced similar yields.

the BarleyBin Field Lab
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Barley Seeding Rates (Naicam)

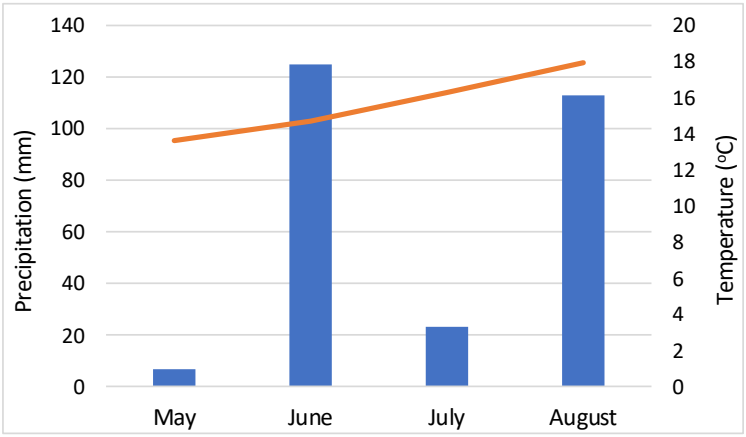
Objective: Optimizing barley seeding rates based on target plant density to balance seed costs, yield, crop competitiveness and stand management.

Trt #	Description	Target Plant Population (plants/ft²)	Actual Seeding Rate (lb/ac)
1	Very Low	19	90
2	Low	26	120
3	Standard	33	150
4	High	39	180

General Trial Information

Variety	AAC Synergy (malt)
Thousand Kernel Weight	47 g
Germination	98%
Seed Treatment	Raxil® PRO (prothioconazole + tebuconazole + metalaxyl)
Previous Crop	Canola
Soil Organic Matter	4.32%
Residual Nitrate-N (0-8")	17 lb/ac
Seeding Date	May 12, 2025
Seeding Equipment	Bourgault 3320/6550- ¾" Carbide
Seeding Depth	1 ¼"
Seeding Speed	4.6 mph
Row Spacing	10"
Total Applied Fertilizer (lb/ac N-P-K-S)	88 – 40 – 20 – 0
Crop Protection	June 5: Cirray® (pinoxaden + fenoxaprop-p-ethyl) + Infinity® (bromoxynil + pyrasulfotole) + Pivot® (propiconazole) July 7: Prosaro® XTR (prothioconazole + tebuconazole)

Precipitation from rain gauge and temperature from Environment Canada Weather Station (Pilger)



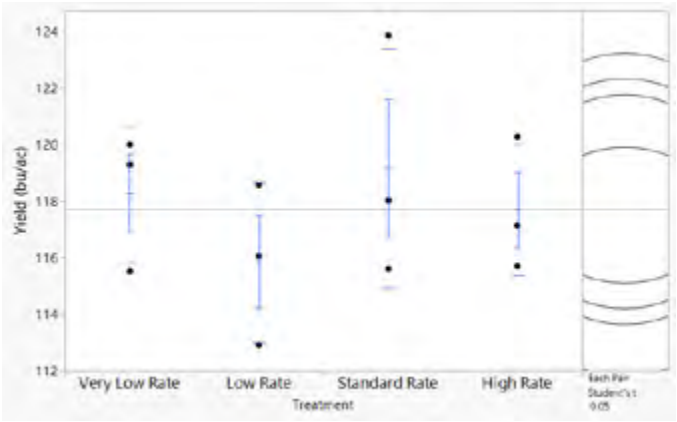
Producer/Agronomist Comments:

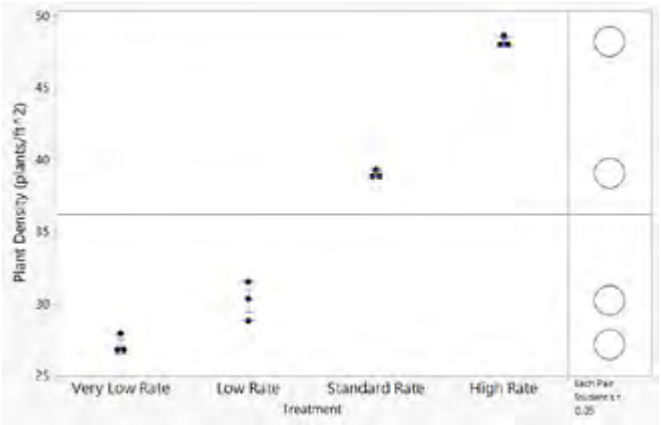
"The trial was uniform across replicates, with consistent maturity, height, lodging, and harvest timing; only a minimal increase in lodging was observed at the 180 lb/ac seeding rate. No disease or insect issues occurred, weed pressure was very low, and identical fertility, fungicide, and cropping practices were applied to all treatments."

Results

Treatment	Plant Density (plants/ft²)	Survival (%)	Lodging (1=erect, 9=flat)	Yield (bu/ac)	Thousand Kernel Weight (TKW) (g/1000)*	Test Weight (TW) (kg/hL)*	Protein (%)*	Plumps (%)*	Thins (%)*	Germ (%)*
Very Low	27 d	139.4 a	5.0 a	118.3 a	47.2	63.3	11.7	97.4	0.9	97.6
Low	30 c	115.7 c	5.0 a	115.8 a	46.8	63.3	11.8	97.2	0.9	97.6
Standard	39 b	119.7 bc	5.0 a	119.2 a	47.6	63.4	11.6	97.1	0.8	98.0
High	48 a	123.8 b	6.0 a	117.7 a	46.1	63.4	11.7	97.3	0.8	98.8
SED[1]	0.712	2.897	0.000	2.372						
p-value[2]	<.0001	0.0008	0.9782	0.5861						

**Not analyzed because samples were combined into single treatment composites for analysis*





Economics

	Seeding Rate (lb/ac)	Seed ($/lb)[x]	Seed Treatment ($/ac)[y]	Total Cost ($/ac)	Yield (bu/ac)	Target Price ($/bu)[z]	Gross Revenue ($/ac)	Net Revenue ($/ac)	Relative Profit/Loss ($/ac)
Very Low	90	19.51	6.05	25.56	118.3	5.90	697.97	672.41	11.73
Low	120	26.01	8.06	34.07	115.8	5.90	683.22	649.15	-11.54
Standard	150	32.52	10.08	42.59	119.2	5.90	703.28	660.69	0.00
High	180	39.02	12.09	51.11	117.7	5.90	694.43	643.32	-17.37

[x]2025 Malt Barley, 2025 Crop Planning Guide, Government of Saskatchewan (seed rate 22 plants per square foot, 45 g TKW, 85% germ; seed price $26.88/ac)
[y]2025 Malt Barley, 2025 Crop Planning Guide, Government of Saskatchewan (seed rate 22 plants per square foot, 45 g TKW, 85% germ; seed treatment/inoculants $8.33/ac)
[z]2025 Malt Barley, 2025 Crop Planning Guide, Government of Saskatchewan (target price $5.90/bu)

Summary

Plant density increased significantly from the very low to high seeding rates, with a notable decline in plant survival above the very low rate. Plant densities exceeded targeted seeding rates likely due to drill calibration and metering inaccuracies, seed size and flowability differences, highly favourable emergence conditions, and counting or design effects (e.g. volunteers or tillers). Lodging scores were similar across treatments. Grain yield did not differ among treatments, indicating no yield response to increasing plant density under these conditions. All grain quality parameters were similar across treatments, but were based on a single composite per treatment. Numerical differences among treatments were small and showed no consistent trends. Economically, the best treatment was the very low seeding rate. There are agronomic advantages to higher seeding rates that may not be observed every year , or in the measurements included in this trial.

To review footnote references please refer to overall trial summary on page 11.

The trial was conducted with the agronomic support of

Chad Ferguson of CW Ferguson Farms

the BarleyBin Field Lab
Brought to you by SaskBarley

Barley Seeding Rates
(Plenty)

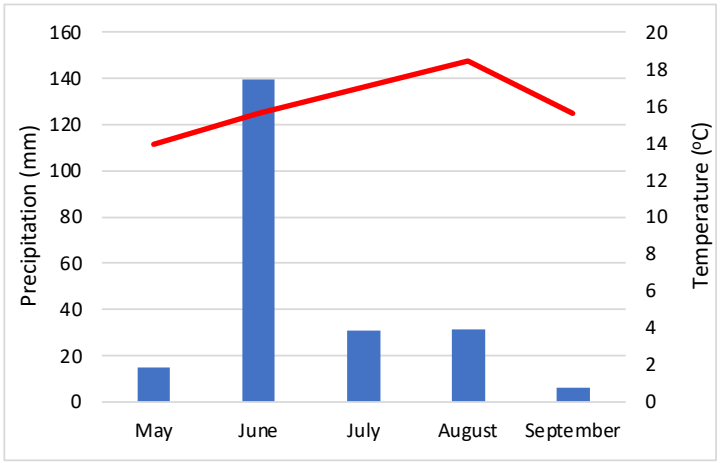
Objective: Optimizing barley seeding rates based on target plant density to balance seed costs, yield, crop competitiveness and stand management.

Trt #	Description	Target Plant Population (plants/ft²)	Actual Seeding Rate (lb/ac)
1	Low	21	100
2	Standard	24	115
3	High	29	136

General Trial Information

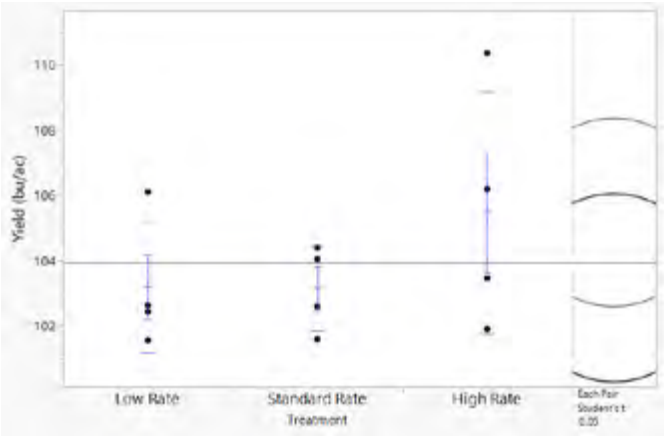
Variety	AAC Connect (malt)
Thousand Kernel Weight	48.6 g
Germination	99%
Seed Treatment	Cruiser® (thiamethoxam)
Previous Crop	Canola
Soil Organic Matter	3.8%
Residual Nitrate-N (0-6")	23 lb/ac
Soil Texture	Fine – textured
Seeding Date	May 21
Seeding Equipment	Seedhawk 8412 ¾" openers
Seeding Depth	1"
Seeding Speed	4.3 mph
Row Spacing	12"
Total Applied Fertilizer (lb/ac N-P-K-S)	43 – 38 – 21 – 0
Crop Protection	June 5: Stonewall® (glyphosate) + DB-878® (dicamba + tribenuron + metsulfuron) June 12: Perimeter® II (fluroxypyr) + PP-2525® (thifensulfuron + tribenuron) + HiActivate® (adjuvant) June 16: PP-2525® (thifensulfuron + tribenuron) + Axial® Xtreme (pinoxaden + fluroxypyr)

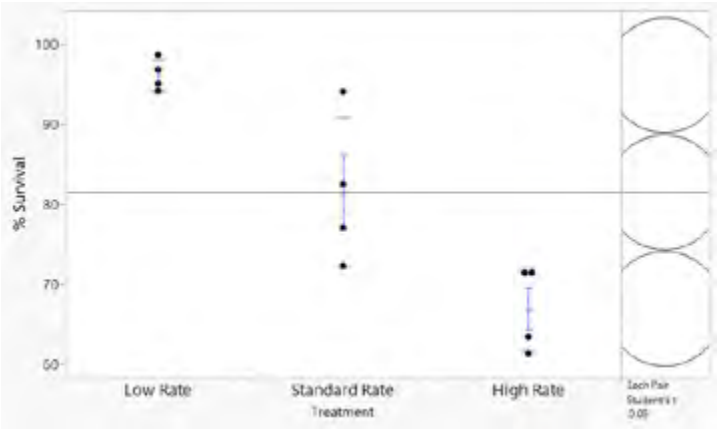
Precipitation and temperature from a local weather station (May 12 – September 11)



Results

Treatment	Plant Density (plants/ft²)	Survival (%)	Height (cm)	Lodging (1=erect, 9=flat)	Yield (bu/ac)	Thousand Kernel Weight (TKW) (g/1000)	Test Weight (TW) (kg/hL)	Protein (%)	Plumps (%)	Thins (%)	Germ (%)
Low	20 a	96.1 a	88.6 a	3.5 a	103.2 a	48.8 a	62.4 a	11.4 a	97.0 a	1.0 a	98.7 a
Standard	20 a	81.5 b	89.2 a	4.8 a	103.2 a	47.5 a	62.5 a	11.5 a	97.1 a	1.0 a	97. 5 a
High	19 a	66.9 c	90.7 a	5.5 a	105.5 a	47.6 a	62.2 a	11.2 a	96.9 a	1.1 a	96.4 a
SED[1]	0.934	3.78	2.16	0.935	1.73	0.822	0.625	0.301	0.870	0.295	1.21
p-value[2]	0.612	0.0008	0.625	0.178	0.366	0.257	0.864	0.743	0.970	0.972	0.232





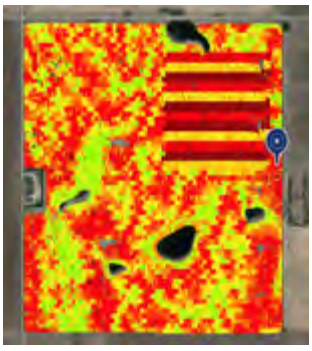
Economics

	Seeding Rate (lb/ac)	Seed ($/lb)[x]	Seed Treatment ($/ac)[y]	Total Cost ($/ac)	Yield (bu/ac)	Target Price ($/bu)[z]	Gross Revenue ($/ac)	Net Profit ($/ac)	Relative Profit/Loss ($/ac)
Low – 19 seeds/ft²	100	21.68	6.72	28.40	103.2	5.90	608.88	580.48	4.26
Standard– 22 seeds/ft²	115	24.93	7.73	32.65	103.2	5.90	608.88	576.23	0.00
High – 26 seeds/ft²	136	29.48	9.14	38.62	105.5	5.90	622.45	583.83	7.61

[x]2025 Malt Barley, 2025 Crop Planning Guide, Government of Saskatchewan (seed rate 22 plants per square foot, 45 g TKW, 85% germ; seed price $26.88/ac)
[y]2025 Malt Barley, 2025 Crop Planning Guide, Government of Saskatchewan (seed rate 22 plants per square foot, 45 g TKW, 85% germ; seed treatment/inoculants $8.33/ac)
[z]2025 Malt Barley, 2025 Crop Planning Guide, Government of Saskatchewan (target price $5.90/bu)

Summary

Across treatments, plant density, height, lodging, and yield were not significantly affected by seeding rate, while survival decreased significantly as seeding rate increased. Although higher seeding rates showed lower survival and a tendency toward increased lodging, grain yield remained stable across all treatments. Similarly, grain quality characteristics did not differ among treatments. Economically, the standard seeding performed poorest. A lower rate has fewer input costs, and although not significant, numerically the higher rate had slightly higher yield - more than enough to offset the higher seeding cost.



To review footnote references please refer to overall trial summary on page 11.

The trial was conducted with the agronomic support of

MNP AgINTELLECT

the BarleyBin Field Lab
Brought to you by SaskBarley

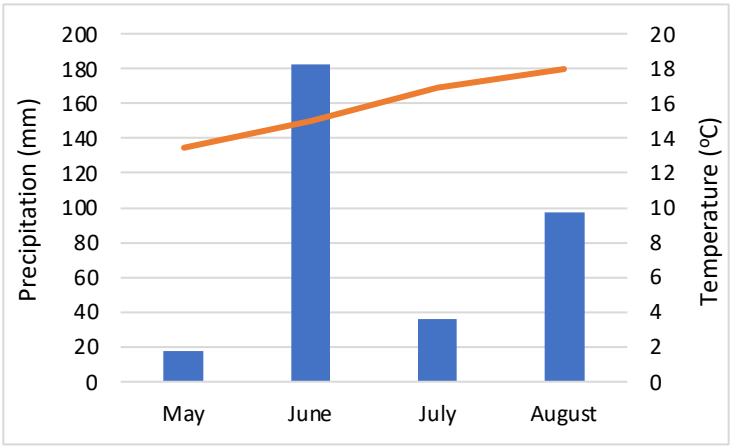
Barley Seeding Rates
(Wakaw 1)

Objective: Optimizing barley seeding rates based on target plant density to balance seed costs, yield, crop competitiveness and stand management.

Trt #	Description	Target Plant Population (plants/ft²)	Actual Seeding Rate (lb/ac)
1	Low	21	115
2	Standard	24	133
3	High	29	157

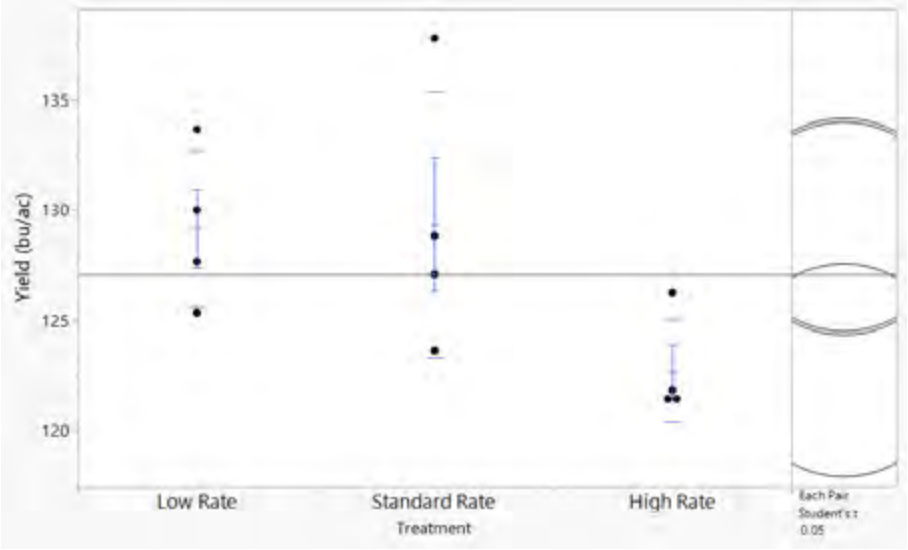
General Trial Information	
Variety	Altorado (Feed)
Thousand Kernel Weight	56 g
Germination	99%
Seed Treatment	N/A
Previous Crop	Canola
Soil Organic Matter	4.7%
Residual Nitrate-N	
- **0-6”**	20 lb/ac
- **6-12”**	9 lb/ac
Seeding Date	May 9
Seeding Equipment	SeedMaster 5012 ½” openers
Seeding Depth	¾”
Seeding Speed	4 mph
Row Spacing	12”
Total Applied Fertilizer (lb/ac N-P-K-S)	75 – 33 – 15 – 15
Crop Protection	May 6: Korrex II® (florasulam + dicamba) + glyphosate June 16: Barricade® (prodiamine) + Avant® (indaziflam) July 5: Miravis® Ace (pydiflumetofen + propiconazole) + Li® 700

Precipitation and temperature from local weather station



Results

Treatment	Plant Density (plants/ft²)	Survival (%)	Height (cm)	Lodging (1=erect, 9=flat)	Yield (bu/ac)	Thousand Kernel Weight (TKW) (g/1000)	Test Weight (TW) (kg/hL)	Protein (%)	Plumps (%)	Thins (%)
Low	19 c	87.8 a	88.3 a	1.0 a	129.2 a	52.7 a	64.5 a	11.5 a	98.3 a	0.49 a
Standard	22 b	89.0 a	86.9 ab	1.0 a	129.3 a	51.8 a	64.6 a	12.0 a	97.9 a	0.46 a
High	24 a	84.5 a	84.4 b	1.0 a	122.7 a	51.5 a	64.2 a	11.6 a	98.1 a	0.60 a
SED[1]	0.935	3.87	1.05	0.0	2.61	0.864	0.239	0.205	0.330	0.071
p-value[2]	0.002	0.530	0.029	1.0	0.074	0.395	0.320	0.091	0.603	0.217



Economics

	Seeding Rate (lb/ac)	Seed ($/lb)[x]	Seed Treatment ($/ac)[y]	Total Cost ($/ac)	Yield (bu/ac)	Target Price ($/bu)[z]	Gross Revenue ($/ac)	Net Revenue ($/ac)	Relative Profit/Loss ($/ac)
Low	115	23.89	7.73	31.62	129.2	4.81	621.45	589.84	4.45
Standard	133	27.62	8.93	36.55	129.3	4.81	621.93	585.38	0.00
High	157	32.62	10.55	43.16	122.7	4.81	590.19	547.02	-38.36

[x]2025 Feed Barley, 2025 Crop Planning Guide, Government of Saskatchewan (seed rate 22 plants per square foot, 45 g TKW, 85% germ; seed price $25.76/ac)
[y]2025 Feed Barley, 2025 Crop Planning Guide, Government of Saskatchewan (seed rate 22 plants per square foot, 45 g TKW, 85% germ; seed treatment/inoculants $8.33/ac)
[z]2025 Feed Barley, 2025 Crop Planning Guide, Government of Saskatchewan (target price $4.81/bu)

Summary

Plant density increased significantly from the low to high seeding rates, while seedling survival and lodging were unaffected. Yield was similar between low and standard seeding rates (~129 bu/ac) but was reduced in the high seeding rate (122.7 bu/ac), with this decline approaching significance. Grain quality parameters, including thousand kernel weight, test weight, plumps, thins, and germination, were not influenced by treatment, while protein content showed a nearly significant tendency to be slightly higher in the standard rate. Collectively, these results indicate that increasing plant density beyond the standard rate provides no economic advantage and may negatively impact crop performance.

To review footnote references please refer to overall trial summary on page 11.

The trial was conducted with the agronomic support of

SARA OLEXSYN

the BarleyBin Field Lab
Brought to you by SaskBarley

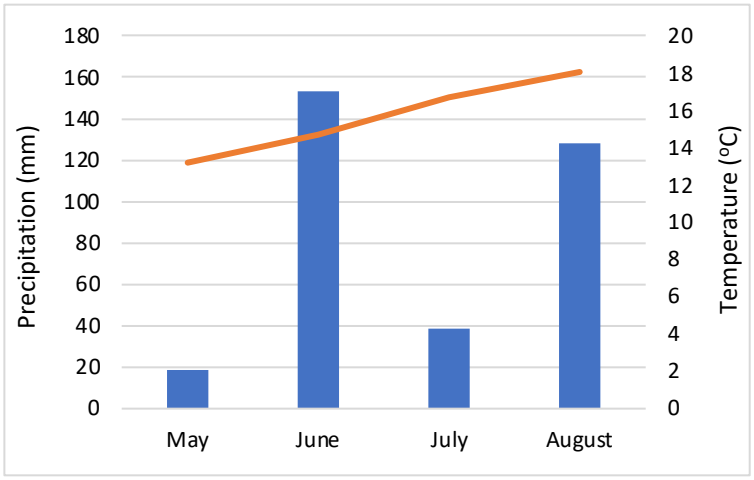
Barley Seeding Rates
(Wakaw 2)

Objective: Optimizing barley seeding rates based on target plant density to balance seed costs, yield, crop competitiveness and stand management.

Trt #	Description	Target Plant Population (plants/ft²)	Actual Seeding Rate (lb/ac)
1	Low	21	115
2	Standard	24	133
3	High	29	157

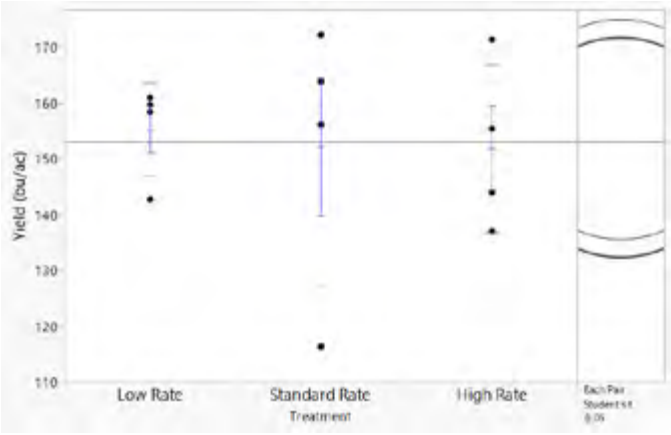
General Trial Information	
Variety	AB Advantage (feed)
Thousand Kernel Weight	56 g
Germination	99%
Previous Crop	Canola
Soil Organic Matter	4.8%
Residual Nitrate-N (0-12")	43 lb/ac
Seeding Date	May 15
Seeding Equipment	SeedMaster 5012 ½" openers
Seeding Depth	¾"
Seeding Speed	4 mph
Row Spacing	12"
Total Applied Fertilizer (lb/ac N-P-K-S)	80 – 43 – 10 – 15
Crop Protection	May 7: Blitz® (florasulam) + glyphosate June 17: Axial® Xtreme (pinoxaden) + MCPA® July 12: Miravis® Ace (pydiflumetofen + propiconazole) + Li 700

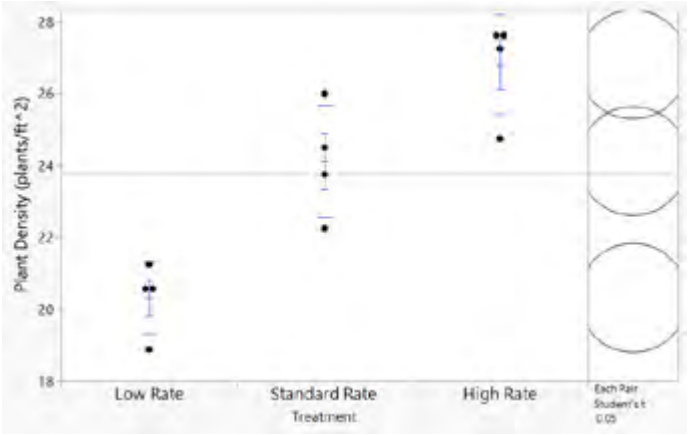
Precipitation and temperature from local weather station



Results

Treatment	Plant Density (plants/ft²)	Survival (%)	Height (cm)	Lodging (1=erect, 9=flat)	Yield (bu/ac)	Thousand Kernel Weight (TKW) (g/1000)	Test Weight (TW) (kg/hL)	Protein (%)	Plumps (%)	Thins (%)
Low	20 b	96.2 a	113.0 a	3.8 a	155.3 a	45.3 a	60.9 a	11.8 a	97.2 a	0.67 a
Standard	24 a	98.7 a	109.9 ab	3.0 a	152.1 a	46.1 a	62.0 a	11.8 a	98.4 a	0.54 a
High	27 a	92.8 a	106.0 b	3.3 a	151.9 a	43.9 a	60.0 a	12.0 a	96.7 a	0.56 a
SED[1]	1.10	4.45	1.73	1.21	7.71	1.10	0.780	0.222	1.01	0.127
p-value[2]	0.003	0.462	0.018	0.824	0.890	0.200	0.105	0.454	0.295	0.576





Economics

	Seeding Rate (lb/ac)	Seed ($/lb)[x]	Seed Treatment ($/ac)[y]	Total Cost ($/ac)	Yield (bu/ac)	Target Price ($/bu)[z]	Gross Revenue ($/ac)	Net Revenue ($/ac)	Relative Profit/ Loss ($/ac)
Low	115	23.89	7.73	31.62	155.3	4.81	746.99	715.38	20.33
Standard	133	27.63	8.93	36.56	152.1	4.81	731.60	695.05	0.00
High	157	32.62	10.55	43.16	151.9	4.81	730.64	687.48	-7.57

[x]2025 Feed Barley, 2025 Crop Planning Guide, Government of Saskatchewan (seed rate 22 plants per square foot, 45 g TKW, 85% germ; seed price $25.76/ac)
[y]2025 Feed Barley, 2025 Crop Planning Guide, Government of Saskatchewan (seed rate 22 plants per square foot, 45 g TKW, 85% germ; seed treatment/inoculants $8.33/ac)
[z]2025 Feed Barley, 2025 Crop Planning Guide, Government of Saskatchewan (target price $4.81/bu)

Summary

Plant density increased significantly from the low to high seeding rates, while plant survival and lodging were unaffected. Plant height decreased with increased seeding rates. Grain yield did not differ among treatments. Grain quality parameters were not influenced by treatment, with only minor and inconsistent numerical differences. Overall, the low seeding rate was most economical, but there are some benefits that can be challenging to measure.

To review footnote references please refer to overall trial summary on page 11.

The trial was conducted with the agronomic support of

SARA OLEXSYN

the BarleyBin Field Lab
Brought to you by SaskBarley

Optimizing Barley Fertility

Increasing applied fertilizer rates can increase barley yield and quality. Prairie soils are often deficient in nitrogen (N) and phosphorus (P). Some soils are also deficient in potassium (K), sulphur (S), and possibly one or more micronutrients. However, depending on the growing environment, genetics, and other management practices within the production system, increasing fertilizer rates may result in differing economic returns for each farm. Higher nitrogen fertilizer rates may also lead to increased crop lodging or decreased malting quality.

Objective

To quantify the agronomic and economic impact of increasing fertility rates on your farm under typical management.

Treatments

1)	Normal Rate: Soil-test recommended rate based on yield goal
2)	Reduced Rate: 25% lower than normal rate
3)	Enhanced Rate: 25% higher than normal rate
4)	Variable Rate: Soil-test recommended rate based on yield goal for separate management zones (Optional)

The treatments are replicated four times and randomized within the field resulting in 9-12 plots per trial. Apart from fertility, all treatments are managed the same agronomically. All fertilizer apart from the nutrients being manipulated in the treatments are applied consistently across all treatments and are at a rate that is not limiting to yield potential. All fertilizer is applied by the same methods for each treatment (i.e. same equipment, source, timing, and placement). To evaluate the influence of variable topography on plant populations, sections of plots are further identified by landscape position (knoll, mid-slope, and depression), and data is collected separately within these subplots.

Data collected

- Seed test
- Spring soil test
- In-season plant density, at the 2-4 leaf stage, by landscape position within plots, if applicable
- Height and lodging at the soft dough to late dough stage
- Field history and management practices
- Yield by plots
- General in-season observations such as weed competition, disease susceptibility, standability, and maturity
- Weather data

The following footnotes will be referred to for individual site reports for this protocol:

[1]SED is a measure of how much variability (same units as mean) you would expect in the difference between sample means if you repeated the experiment several times. The Least Significant Difference (LSD) is approximately 2 times the SED.

[2]A linear regression was used to assess the effects of varieties on the response variables. The data was also analyzed using the Mixed Model procedure in JMP with replicate considered random and fertility rate considered a fixed effect. Treatment means were separated using Least Significant Difference (LSD) test. All treatment effects and differences between means were considered significant at $p \leq 0.05$. However, p-values of 0.05-0.1 may also be acknowledged.

$P < 0.05$: There is a 95% probability (19 out of 20 times) that the observed difference is due to the treatment rather than random variation.
$P < 0.1$: There is a 90% probability (9 out of 10 times) that the difference is due to the treatment effect.
$P > 0.1$: There is a higher likelihood that the observed difference is due to random variability rather than the treatment.

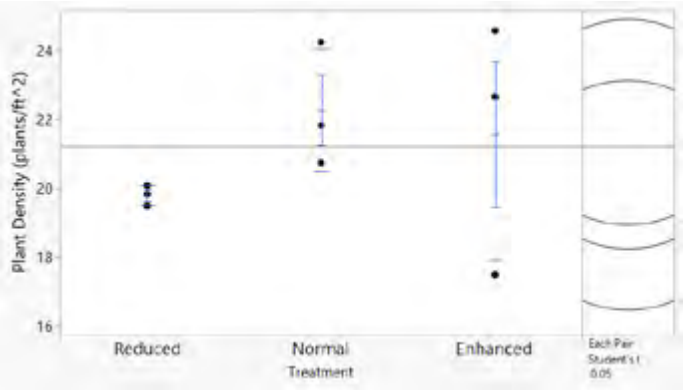
2024 Results (1 site)

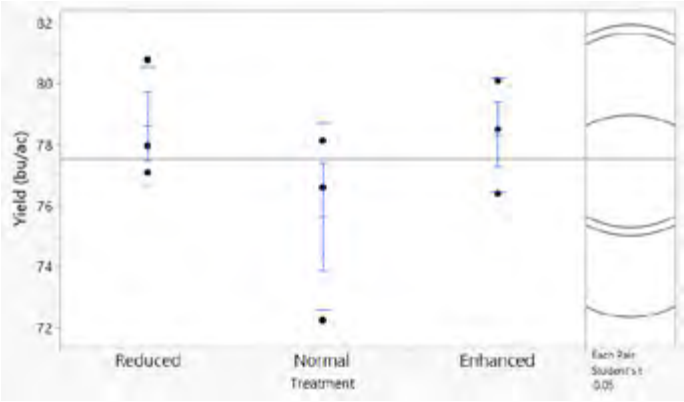
Nitrogen rate had no significant effect on plant density in 2024*, or the seed quality variables measured. Although the relationship between yield and nitrogen rates approached significance, variability prevented it from being conclusive. Varying nitrogen rates had minimal impact on thousand kernel weights, test weight, protein levels, plumps, thins and germination rates. The reduced nitrogen treatment yielded the highest return (not shown). The lack of a nitrogen response can be attributed to higher residual nitrogen levels found in spring soil samples, along with the narrow range of application rates (+/- 6 lb N/ac). Following this initial trial, the BarleyBin Field Lab fertility protocol was refined to require a minimum of 25% variance from the standard rate.

*2024 data was reanalyzed in 2025 to be consisted with revised statistical techniques used in the 2025 growing season

Treatment #	Nitrogen Rate	Actual N fertilizer (lb/ac)
1	Reduced Rate: - 10%	42
2	Normal Rate	48
3	Enhanced Rate: + 10%	54

Treatment	Plant Density (plants/ft^2)	Yield (bu/ac)	Thousand Kernel Weight (TKW) (g/1000)	Test Weight (TW) (kg/hL)	Protein (%)	Plumps (%)	Thins (%)	Germ (%)
Reduced Rate	20 a	78.6 a	46.5 a	61.3 a	12.2 a	94.3 a	1.7 a	100.0 a
Normal Rate	22 a	75.7 a	46.0 a	61.0 a	12.3 a	94.1 a	1.8 a	99.7 a
Enhanced Rate	22 a	78.3 a	47.6 a	61.2 a	12.2 a	95.7 a	1.2 a	100.0 a
SED[1]	1.88	1.10	1.04	0.509	0.100	1.17	0.395	0.272
p-value[2]	0.469	0.098	0.382	0.822	0.563	0.411	0.387	0.444



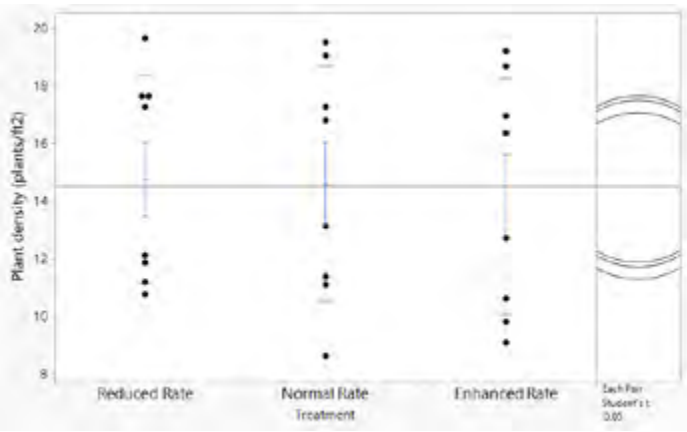


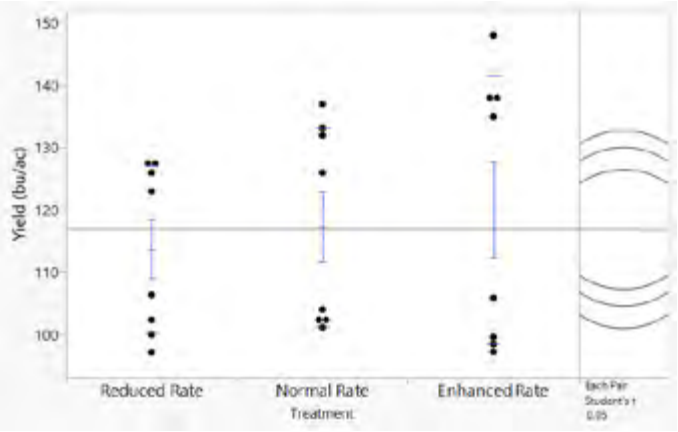
2025 Combined (4 sites)

Due to the range of fertilizer products and rates applied, only Birch Hills and Luseland could be combined in 2025. No significant effects were seen throughout all parameters studied. The enhanced rate resulted in the highest yield, but was not significant.

Treatment #	Description	Birch Hills Actual N Fertilizer (lb/ac)	Luseland Actual N Fertilizer (lb/ac)
1	Reduced Rate: - 25%	54	48
2	Standard Rate	70	64
3	Enhanced Rate: + 25%	84	81

Treatment	Plant Density (plants/ft^2)	Heights (cm)	Lodging (1-erect, 9- flat)	Yield (bu/ac)	Thousand Kernel Weight (TKW) (g/1000)	Test Weight (TW) (kg/hL)	Protein (%)	Plumps (%)	Thins (%)	Germ (%)
Reduced Rate	15 a	68.8 a	1.3 a	113.8 a	44.5 a	61.6 a	11.5 a	93.8 a	1.5 a	94.9 a
Normal Rate	15 a	70.0 a	2.0 a	117.3 a	44.8 a	62.0 a	11.6 a	94.2 a	1.3 a	97.0 a
Enhanced Rate	14 a	67.8 a	2.6 a	120.1 a	44.5 a	62.1 a	12.0 a	93.6 a	1.4 a	97.0 a
SED[1]	2.11	5.35	1.05	9.34	1.96	1.59	0.459	3.40	0.671	2.631
p-value[2]	0.959	0.918	0.442	0.799	0.982	0.938	0.532	0.985	0.947	0.6729





Due to the range of fertilizer products and rates applied, no 2025 sites were able to be combined with the 2024 site.

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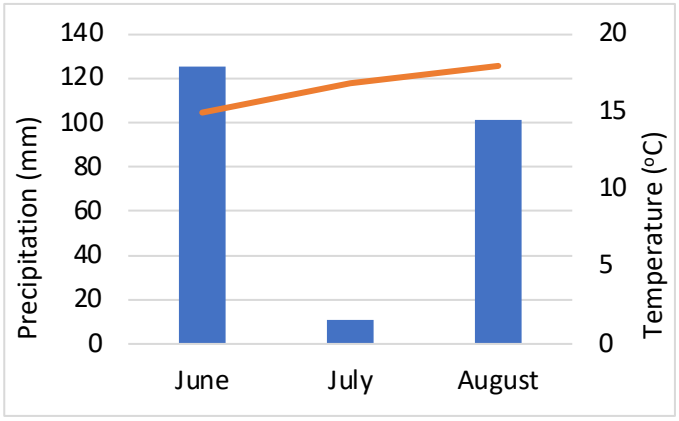
Barley Fertility Rates
(Birch Hills)

Objective: To quantify the agronomic and economic impact of increasing fertility rates on your farm under typical management.

Trt #	Description	46 – 0 – 0 Applied (lb/ac)	Actual N Fertilizer (lb/ac)
1	Reduced Rate: - 25%	118	54
2	Standard Rate	153	70
3	Enhanced Rate: + 25%	183	84

General Trial Information	
Variety	Carleton (feed)
Seeding Rate	90 lb/ac
Seed Treatment	Raxil® Pro (prothioconazole + tebuconazole + metalaxyl)
Previous Crop	Canola
Soil Organic Matter	4.5%
Spring Residual Nitrate-N	
0-6”	24 lb/ac
6-24”	39 lb/ac
Soil Texture	Medium
Seeding Date	May 23
Seeding Equipment	John Deere/SeedMaster p670
Seeding Depth	1”
Seeding Speed	4.8 mph
Row Spacing	12”
Total Applied P-K-S (lb/ac P-K-S)	25 – 0 – 11
Crop Protection	May 21: Prepass® (florasulam)+ Roundup® (glyphosate) June 25: Axial® Xtreme (pinoxaden + florasulam) + MCPA®

Precipitation from rain gauge and temperature from Environment Canada (Prince Albert Glass Field)



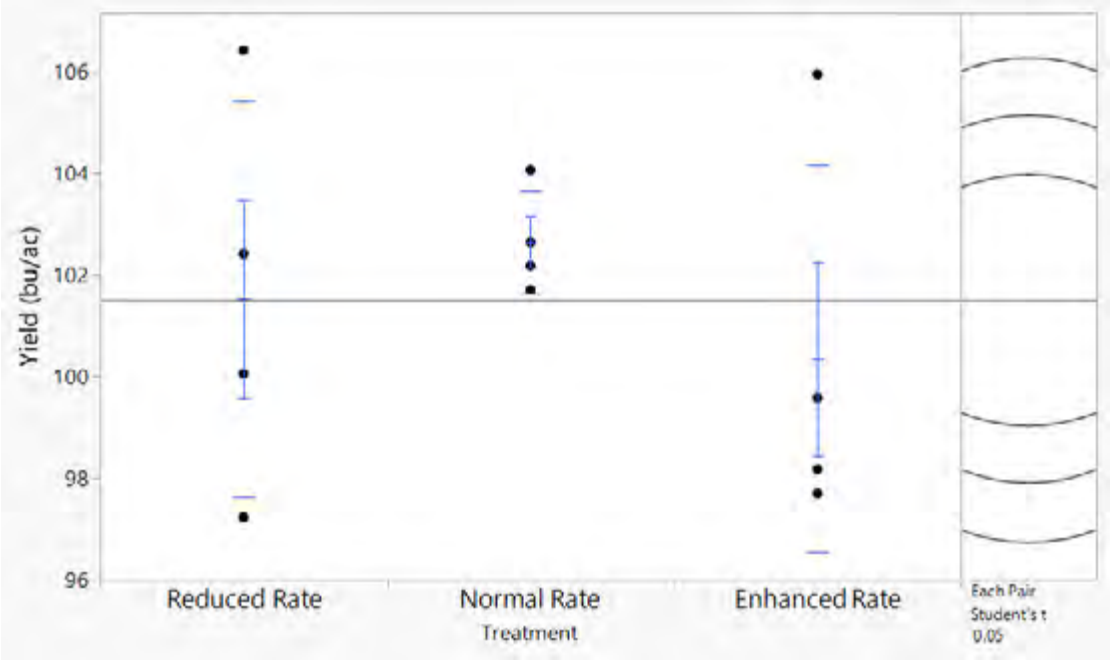
Economics

Treatment Description	46-0-0 (lb/ac)	N ($/ac)[y]	Yield (bu/ac)	Target Price ($/bu)[z]	Gross Revenue ($/ac)	Net Revenue ($/ac)	Relative Profit/Loss ($/ac)
Reduced	118	41.75	101.50	4.81	488.22	446.47	7.09
Standard	153	54.13	102.60	4.81	493.51	439.37	0.00
Enhanced	183	64.68	100.30	4.81	482.44	417.77	-21.61

[y] Nitrogen price, Local Retailer, December 15, 2025 ($780/MT)
[z] 2025 Feed Barley, 2025 Crop Planning Guide, Government of Saskatchewan (target price $4.81/bu)

Results

Treatment	Plant Density (plants/ft²)	Heights (cm)	Lodging (1=erect, 9=flat)	Yield (bu/ac)	Thousand Kernel Weight (TKW) (g/1000)	Test Weight (TW) (kg/hL)	Protein (%)	Plumps (%)	Thins (%)
Reduced	12 a	59.2 a	1.0 a	101.5 a	40.7 a	58.9 a	12.2 b	87.8 a	2.8 a
Standard	11 a	61.7 a	1.0 a	102.6 a	42.0 a	59.6 a	12.3 b	88.8 a	2.3 a
Enhanced	11 a	59.0 a	1.0 a	100.3 a	41.2 a	59.2 a	12.8 a	87.6 a	2.4 a
SE[1]	0.787	1.32	0.00	1.85	0.502	0.392	0.195	1.14	0.418
P-value[2]	0.531	0.148	1.00	0.503	0.102	0.275	0.040	0.548	0.525



Summary

Across treatments, plant density, height, lodging, and yield did not differ significantly. Yields were similar across treatments, ranging from approximately 100 to 103 bu/ac, and lodging was minimal (rating = 1.0) in all cases. Overall, reduced, standard, and enhanced treatments showed comparable agronomic performance under the conditions of this study. Most grain quality traits, including thousand kernel weight, test weight, plumps, and thins, were also not significantly affected by treatment. Protein content was the only parameter that differed, with the enhanced treatment resulting in higher protein than the reduced and standard treatments.

To review footnote references please refer to overall trial summary on page 25.

the BarleyBin Field Lab
Brought to you by SaskBarley

Barley Fertility Rates
(Elfros)

Objective: To quantify the agronomic and economic impact of increasing fertility rates on your farm under typical management.

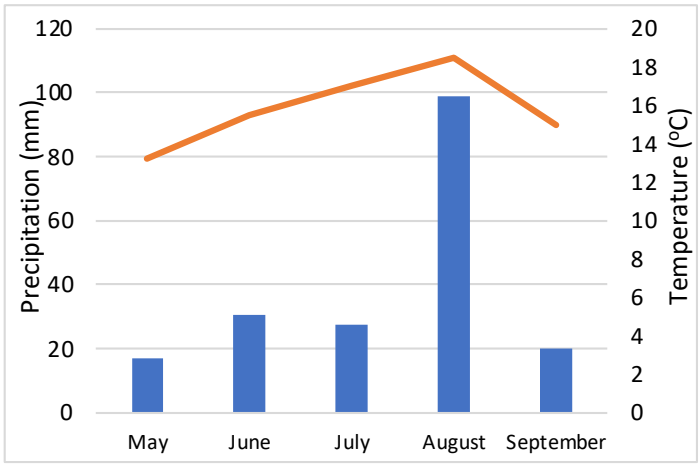
Trt #	Description	Total Applied Fertilizer (N-P-K-S lb/ac)*
1	Normal Rate	75 – 0 – 35 – 0
2	Enhanced Rate	85 – 21 – 42 – 5 – 0.51 Zn
3	Max Rate	97 – 47 – 50 – 11 – 1.10 Zn

*75 lb/ac of N and 35 lb/ac of K were applied in the fall. Remainder applied in the spring, sidebanded.
Applied with a combination of 46-0-0, MESZ (12-40-0-10-1 ZN), 0-0-60 The primary variable targeted in this trial was the application of MESZ, which resulted in variable N, P, S, and Zn. Additional K was also applied. Any differences detected cannot be attributed to a single nutrient.

General Trial Information

Variety	CDC Churchill (malt)
Seeding Rate	3.07 bu/ac
Seed Treatment	Raxil® Pro (tebuconazole + metalaxyl) + Awaken (metalaxyl, carboxin + thiram)
Previous Crop	Canola
Soil Organic Matter	4.5%
Spring Residual Nitrate-N	
0-6”	24 lb/ac
6-24”	39 lb/ac
Soil Texture	Medium
Seeding Date	May 23, 2025
Seeding Equipment	John Deere/SeedMaster P670
Seeding Depth	1”
Seeding Speed	4.8 mph
Row Spacing	12”
Crop Protection	May 1: Roundup® (glyphosate) May 28: Axial® (pinoxaden) + Stellar® (topramezone + clopyralid) July 5: Miravis® Era (pydiflumetofen + propiconazole)

Precipitation and temperature from Environment Canada (Wynyard (AUT))



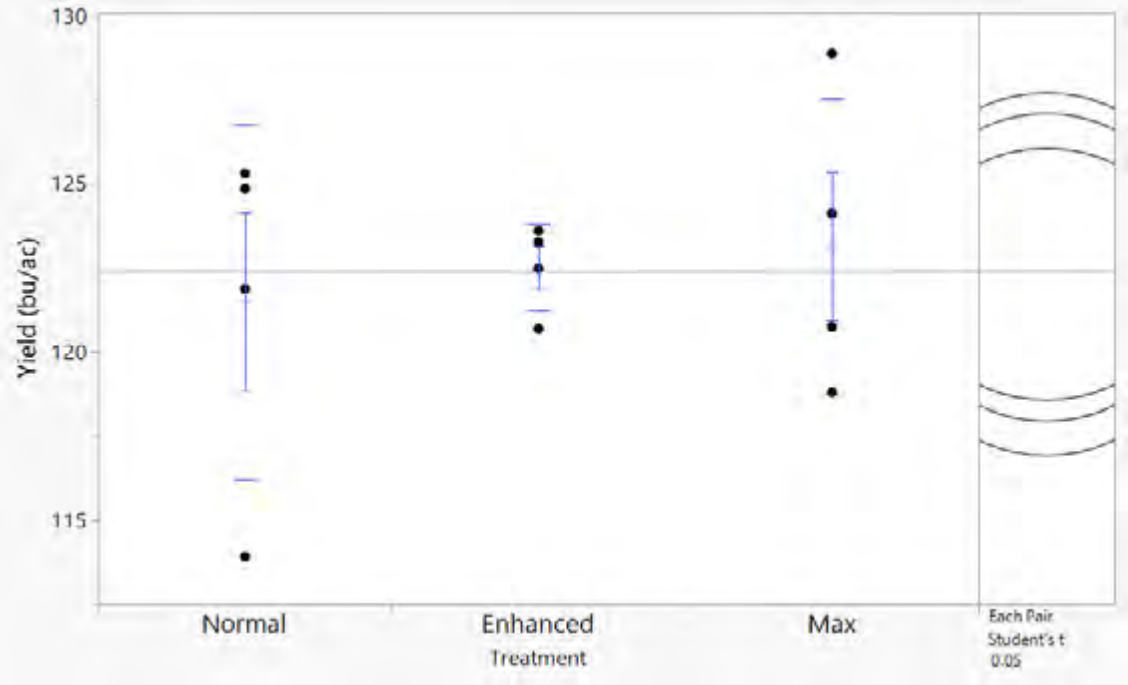
Economics

Treatment Description	Fertilizer Cost ($/ac)[y]	Yield (bu/ac)	Target Price ($/bu)[z]	Gross Revenue ($/ac)	Net Revenue ($/ac)	Relative Profit/Loss ($/ac)
Normal Rate	75.68	121.5	4.81	584.42	508.74	0.00
Enhanced Rate	111.41	122.5	4.81	589.23	477.82	-30.92
Max Rate	155.02	123.1	4.81	592.11	437.09	-71.64

[y]Fertilizer Price, Local Retailer, December 15, 2025 ($780/MT 46-0-0, $1,230/MT MESZ, $680/MT 0-0-60)
[z]2025 Feed Barley, 2025 Crop Planning Guide, Government of Saskatchewan (target price $4.81/bu)

Results

Treatment	Plant Density (plants/ft²)	Height (cm)	Lodging (1=erect, 9=flat)	Yield (bu/ac)	Thousand Kernel Weight (TKW) (g/1000)	Test Weight (TW) (kg/hL)	Protein (%)	Plumps (%)	Thins %)	Germ (%)
Normal Rate	12 a	68.7 a	4.3 a	121.5 a	42.1 a	62.3 a	12.7 a	99.1 a	1.5 a	93.4 a
Enhanced Rate	12 a	68.0 a	4.0 a	122.5 a	43.1 a	63.8 a	12.6 a	95.0 a	1.4 a	92.3 a
Max Rate	12 a	68.0 a	3.0 b	123.1 a	43.1 a	63.6 a	12.4 a	94.0 a	1.5 a	92.8 a
SED[1]	0.143	0.347	0.312	2.29	0.800	1.17	0.293	3.96	0.246	1.25
p-value[2]	0.182	0.404	0.016	0.777	0.409	0.421	0.685	0.450	0.942	0.694



Summary

Plant density, plant height, and grain yield did not differ significantly among fertilizer rates, indicating similar stand establishment and productivity across all treatments. Lodging was the only response variable affected by fertility, with the max fertilizer rate significantly improving standability compared to the normal and enhanced rates. Grain quality parameters were unaffected by fertilizer rate, demonstrating that higher nutrient inputs did not enhance grain quality. Overall, these results indicate that increased fertilizer rates provided no yield or quality advantage in the conditions of this trial.

To review footnote references please refer to overall trial summary on page 25.

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Barley Fertility Rates
(Luseland)

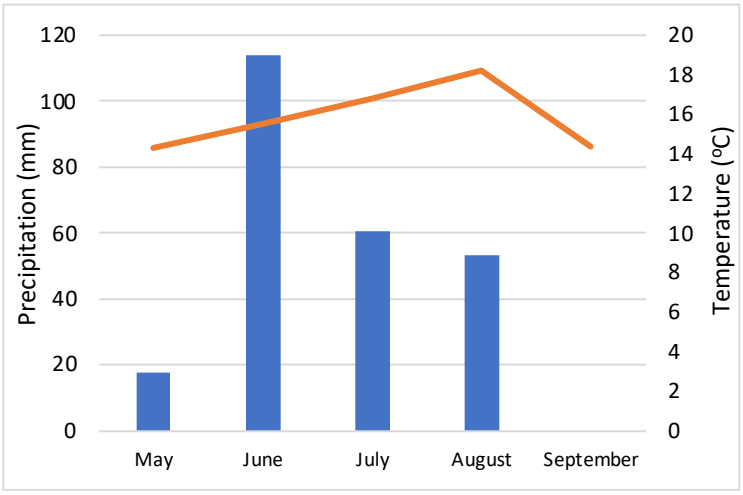
Objective: To quantify the agronomic and economic impact of increasing fertility rates on your farm under typical management.

Trt #	Description	46 – 0 – 0 Applied (lb/ac)	Actual N Fertilizer (lb/ac)
1	Reduced Rate: - 25%	105	48
2	Normal Rate	140	64
3	Enhanced Rate: + 25%	175	81

General Trial Information

Variety	AAC Synergy (malt)
Seeding Rate	120 – 130 lb/ac (VR)
Seed Treatment	Cruiser® Vibrance Quattro (thiamethoxam, sedaxane, fludioxonil, metalaxyl)
Previous Crop	Canola
Soil Organic Matter	5.6%
Spring Residual Nitrate-N	
0-6”	39 lb/ac
6-24”	18 lb/a
Seeding Date	May 10, 2025
Seeding Equipment	Bourgault 3335 QDA
Seeding Depth	1”
Seeding Speed	3.1 mph
Row Spacing	10”
Total Applied P-K-S (lb/ac P-K-S)	26 – 21 – 0
Crop Protection	May 8: Glyphosate + Engenia® (dicamba) June 5: Axial® Xtreme (pinoxaden + florasulam) + Buctril® M (bromoxynil +MCPA)

Precipitation and temperature from local weather station (May 6 – September 9)



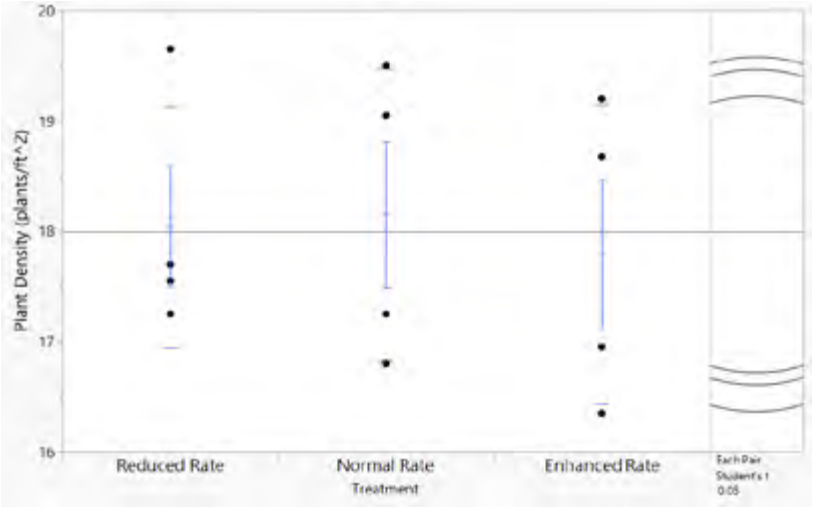
Economics

Treatment Description	46-0-0 (lb/ac)	N ($/ac)[y]	Yield (bu/ac)	Target Price ($/bu)[z]	Gross Revenue ($/ac)	Net Revenue ($/ac)	Relative Profit/Loss ($/ac)
Reduced Rate	105.0	37.15	126.0	5.90	743.40	706.25	-23.02
Normal Rate	140.0	49.53	132.0	5.90	778.80	729.27	0.00
Enhanced Rate	175.0	61.92	139.8	5.90	824.82	762.90	33.64

[y]Nitrogen price, Local Retailer, December 15, 2025 ($780/MT)
[z]2025 Malt Barley, 2025 Crop Planning Guide, Government of Saskatchewan (target price $5.90/bu)

Results

Treatment	Plant Density (plants/ft²)	Height (cm)	Lodging (1=erect, 9=flat)	Yield (bu/ac)	Thousand Kernel Weight (TKW) (g/1000)	Test Weight (TW) (kg/hL)	Protein (%)	Plumps (%)	Thins (%)	Germ (%)
Reduced Rate	18 a	78.4 a	1.5 a	126.0 b	48.2 a	64.3 b	10.8 a	99.7 a	0.24 a	98.6 a
Normal Rate	18 a	78.2 a	3.0 a	132.0 b	47.6 a	64.5 b	10.9 a	99.5 a	0.28 a	98.5 a
Enhanced Rate	18 a	76.5 a	4.3 a	139.8 a	47.9 a	65.0 a	11.1 a	99.6 a	0.34 a	99.5 a
SED[1]	0.942	2.38	1.65	2.93	0.401	0.177	0.271	0.121	0.076	0.412
p-value[2]	0.929	0.695	0.320	0.0097	0.422	0.0224	0.413	0.341	0.489	0.0799



Summary

Plant density, plant height, and lodging were not significantly influenced by fertilizer rate, indicating consistent stand establishment and standability across all treatments. Grain yield differed among treatments, with the enhanced rate producing a significantly higher yield than both the reduced and normal fertilizer rates, demonstrating a clear productivity response to increased fertility. Grain quality was largely unaffected by fertilizer rate; however, the enhanced rate significantly improved test weight, and showed a positive trend toward higher germination, indicating that higher fertilizer inputs increased both yield and grain density without compromising overall quality.

To review footnote references please refer to overall trial summary on page 25.

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Barley Fertility Rates
(Rosetown)

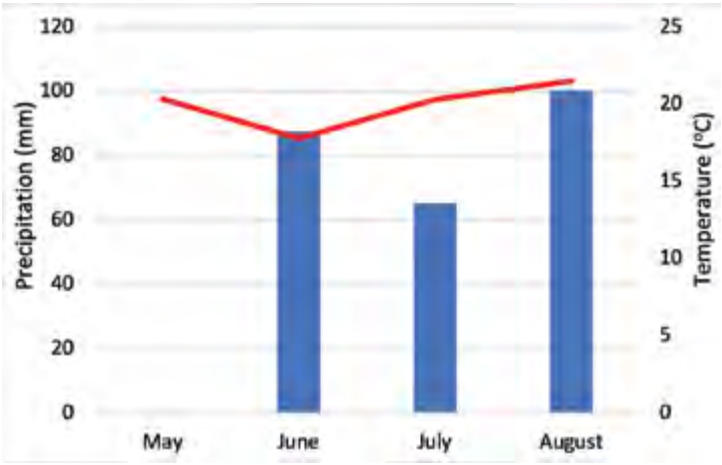
Objective: To quantify the agronomic and economic impact of increasing fertility rates on your farm under typical management.

Trt #	Description	46 – 0 – 0 Applied (lb/ac)	Actual N Fertilizer (lb/ac)
1	Reduced Rate: - 25%	166	76
2	Normal Rate	222	102
3	Enhanced Rate: + 25%	278	128

General Trial Information

Variety	CDC Austenson (feed)
Thousand Kernel Weight	36.7 g
Germination	99%
Seeding Rate	100 lb/ac
Seed Treatment	Insure® Cereal
Previous Crop	Canola
Soil Organic Matter	4.0%
Spring Residual Nitrate-N	
0-6”	38 lb/ac
6-24”	36 lb/ac
Soil Texture	Fine
Seeding Date	May 5, 2025
Seeding Equipment	Seed Hawk 8012 980
Seeding Depth	1“
Seeding Speed	6 mph
Row Spacing	12”
Total Applied P-K-S (lb/ac P-K-S)	37 – 16 – 0
Crop Protection	May 4: Roundup® (glyphosate) + Blackhawk® (pyraflufen-ethyl + 2,4-D) June 14: Enforcer® M (fluroxypyr + bromoxynil + MCPA) + Liquid Achieve® (tralkoxydim)

Precipitation and temperature from local weather station



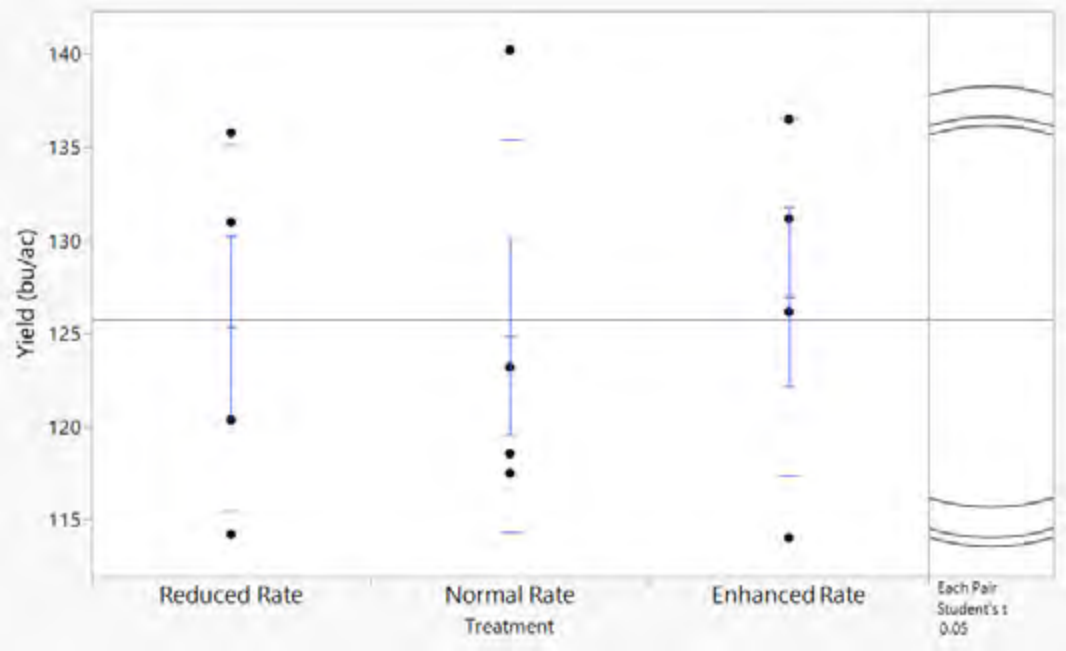
Economics

Treatment Description	46-0-0 (lb/ac)	N ($/ac)[y]	Yield (bu/ac)	Target Price ($/bu)[z]	Gross Revenue ($/ac)	Net Revenue ($/ac)	Relative Profit/Loss ($/ac)
Reduced Rate	166	41.75	125.3	4.81	602.69	560.94	14.31
Normal Rate	222	54.13	124.9	4.81	600.77	546.64	0.00
Enhanced Rate	278	64.68	127.0	4.81	610.87	546.19	-0.44

[y]Nitrogen price, Local Retailer, December 15, 2025 ($780/MT)
[z]2025 Feed Barley, 2025 Crop Planning Guide, Government of Saskatchewan (target price $4.81/bu)

Results

Treatment	Plant Density (plants/ft²)	Height (cm)	Lodging (1=erect, 9=flat)	Yield (bu/ac)	Thousand Kernel Weight (TKW) (g/1000)	Test Weight (TW) (kg/hL)	Protein (%)	Plumps (%)	Thins (%)
Reduced	18 a	72.6 a	3.0 a	125.3 a	47.4 a	61.0 a	11.6 a	99.5 a	0.25 a
Standard	18 a	71.6 a	2.5 a	124.9 a	47.7 a	62.4 a	11.9 a	99.2 a	0.18 a
Enhanced	18 a	76.2 a	2.3 a	127.0 a	47.6 a	61.9 a	12.0 a	99.0 a	0.38 a
SED[1]	1.65	1.93	0.63	7.21	0.544	0.761	0.335	0.463	0.08
p-value[2]	0.842	0.117	0.523	0.955	0.831	0.275	0.547	0.505	0.108



Summary

Across treatments, plant density was consistent at 18 plants/ft², and no significant differences were observed for height, lodging, or yield, though the enhanced rate showed a slight, non-significant tendency toward increased height and yield with reduced lodging. Similarly, grain quality parameters—including thousand kernel weight, test weight, protein, moisture, kernel plumpness, thins, and germination—did not differ significantly among treatments. Taken together, these results indicate that reduced, normal, and enhanced application rates performed equivalently, with no agronomic or quality advantage observed for increasing the rate under the conditions of this study.

To review footnote references please refer to overall trial summary on page 25.

The trial was conducted with the agronomic support of

MNP AgINTELLECT

the BarleyBin Field Lab
Brought to you by SaskBarley

Incorporating Plant Growth Regulators on Saskatchewan Barley Farms

The use of plant growth regulators (PGRs) in high yielding and high moisture areas can provide benefit by reducing lodging risk in cereals. Spring barley varieties have been shown to vary in their response to treatment with PGR trinexapac-ethyl (Moddus), and the response can also vary with growing conditions. PGR application can also impact barley yield and quality.

Objective

To quantify the agronomic and economic impact of PGR (Moddus) application on barley compared to an untreated check across various management, soil, and weather conditions.

Treatments

1)	Untreated Check: No Moddus application
2)	Moddus single application at BBCH growth stage 30-32, applied according to label directions
3)	Moddus split application, with first application at BBCH growth stage 21-24 and second application at BBCH, 37-39, applied according to label directions

The treatments are replicated four times, and randomized within the field resulting in 8 to 12 plots per trial. Apart from PGR application, all treatments are managed the same agronomically including applied fertilizer, seeding date, variety, seed treatment, and pesticide applications.

Data collected

- Seed test
- Spring soil test
- In-season plant density, at the 2-4 leaf stage
- Height and lodging at the soft dough to late dough stage
- Field history and management practices
- Yield by plots
- General in-season observations such as weed competition, disease susceptibility, standability, and maturity
- Weather data

The following footnotes will be referred to for individual site reports for this protocol:

[1]SED is a measure of how much variability (same units as mean) you would expect in the difference between sample means if you repeated the experiment several times. The Least Significant Difference (LSD) is approximately 2 times the SED.

[2]A linear regression was used to assess the effects of varieties on the response variables. The data was also analyzed using the Mixed Model procedure in JMP with replicate considered random and PGR application considered a fixed effect. Treatment means were separated using Least Significant Difference (LSD) test. All treatment effects and differences between means were considered significant at $p \leq 0.05$. However, p-values of 0.05-0.1 may also be acknowledged.

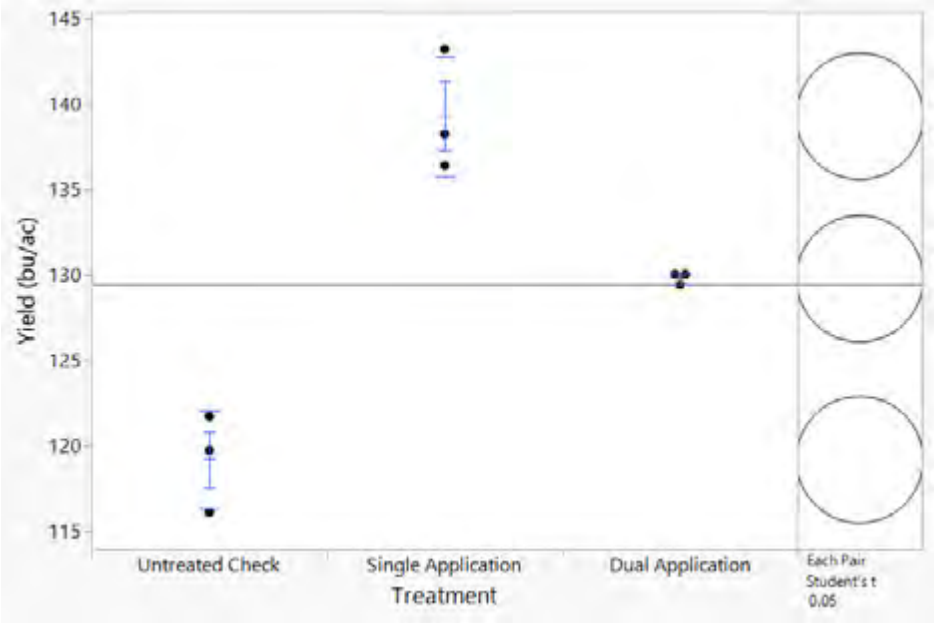
$P < 0.05$: There is a 95% probability (19 out of 20 times) that the observed difference is due to the treatment rather than random variation.
$P < 0.1$: There is a 90% probability (9 out of 10 times) that the difference is due to the treatment effect.
$P > 0.1$: There is a higher likelihood that the observed difference is due to random variability rather than the treatment.

2024 Results (1 Site)

In 2024*, there was only one PGR trial site, located in Humboldt. The application of plant growth regulators (PGRs) led to a significant yield increase. The single application achieved the highest yield at 139.3 bu/ac, representing a 20.2 bu/ac increase over the untreated check. However, while yields increased, PGRs also resulted in lower test weights and fewer plump grains. The single application provided the highest returns (not shown), benefiting from both the increased yield and reduced application costs from a single pass.

*2024 data was reanalyzed in 2025 to be consistent with revised statistical techniques used in the 2025 growing season

Treatment	Plant Density (plants/ft²)	Yield (bu/ac)	Thousand Kernel Weight (TKW) (g/1000)	Test Weight (TW) (kg/hL)	Protein (%)	Plumps (%)	Thins (%)	Germ (%)
Untreated Check	24 a	119.2 c	45.4 a	63.9 a	13.1 a	92.5 a	1.5 a	99.7 a
Single Application	23 a	139.3 a	45.3 a	61.0 b	13.0 a	88.7 a	2.2 a	97.3 a
Dual Application	23 a	129.8 b	45.5 a	63.3 a	13.3 a	92.1 a	1.6 a	98.3 a
SED[1]	0.556	1.98	0.785	0.502	0.156	1.18	0.448	1.09
p-value[2]	0.627	0.0014	0.967	0.0094	0.243	0.056	0.418	0.215



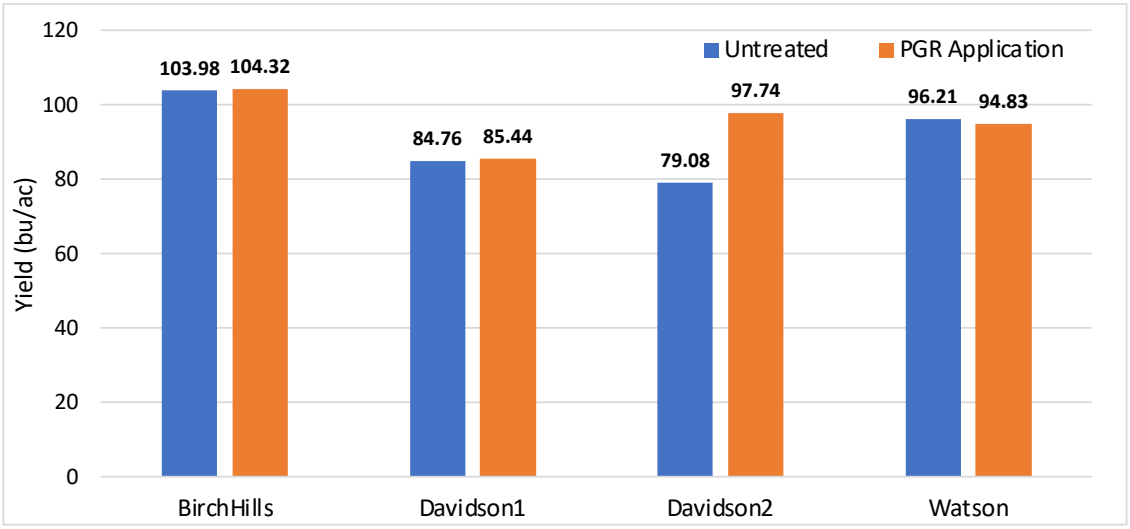
Harvestability Comments from the Producer:

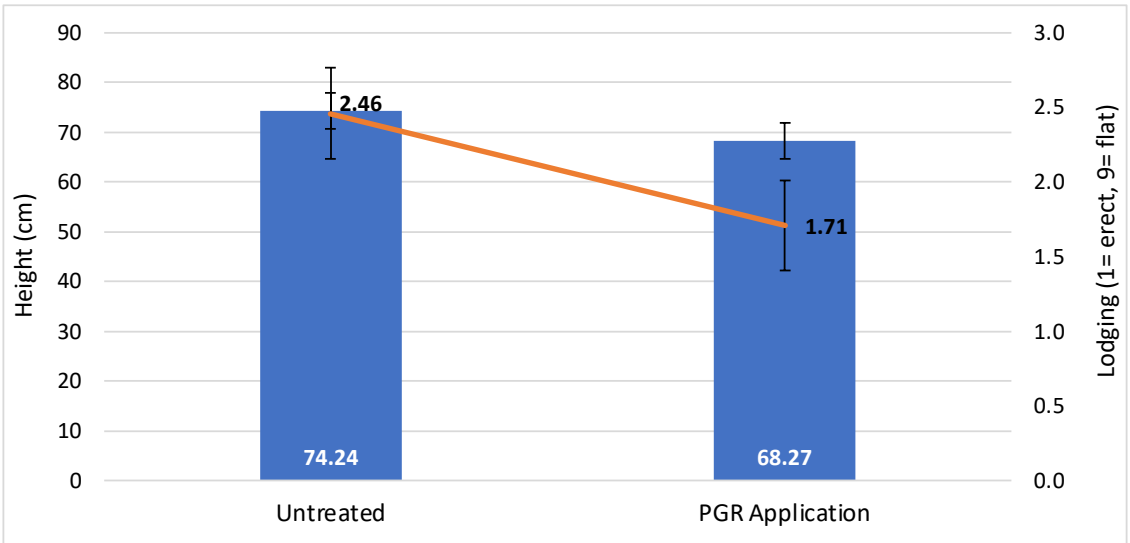
"The full rate applied once was by far the winner in every respect, yield, harvestability, broken off stems, less green in the sample. The half rate had approximately 10% lodged with the odd broken stem, not the head but the whole stem was laying behind the header. What wasn't lodged seemed more mature than the full rate. Check was a mess. 40% lodged, lots of green growing through, extremely hard to combine. What wasn't lodged seemed to be the most mature with the heads kinked right over."

2025 Single Application Combined Results (4 sites)

The 4 sites from 2025 that included two treatments, an untreated check and single application, were combined. PGR application did not affect plant height but significantly reduced lodging and increased yield compared with the untreated check. The Davidson2 site contributed most of the observed yield increase (18.7 bu/ac), while yield differences at the other three sites were negligible. The response at Davidson2 was likely driven by severe lodging, as the untreated check and PGR treatment recorded lodging ratings of 5.13 and 2.75, respectively. Grain quality was largely unchanged; however, PGR application slightly reduced test weight and increased thin kernels, highlighting a yield benefit with some minor trade-offs in grain physical quality.

Treatment	Height (cm)	Lodging (1=erect, 9=flat)	Yield (bu/ac)	Thousand Kernel Weight (TKW) (g/1000)	Test Weight (TW) (kg/hL)	Protein (%)	Plumps (%)	Thins (%)	Germ (%)
Untreated Check	74.2 a	2.5 a	91.0 b	45.4 a	61.6 a	12.7 a	94.7 a	1.1 b	93.2 a
PGR Application	68.3 a	1.7 b	95.6 a	45.3 a	61.2 b	12.8 a	94.0 a	1.7 a	94.1 a
SED[1]	3.70	0.30	0.55	0.251	0.119	0.0	1.05	0.109	2.10
p-value[2]	0.133	0.035	<.0001	0.697	0.0031	0.083	0.545	0.0002	0.685

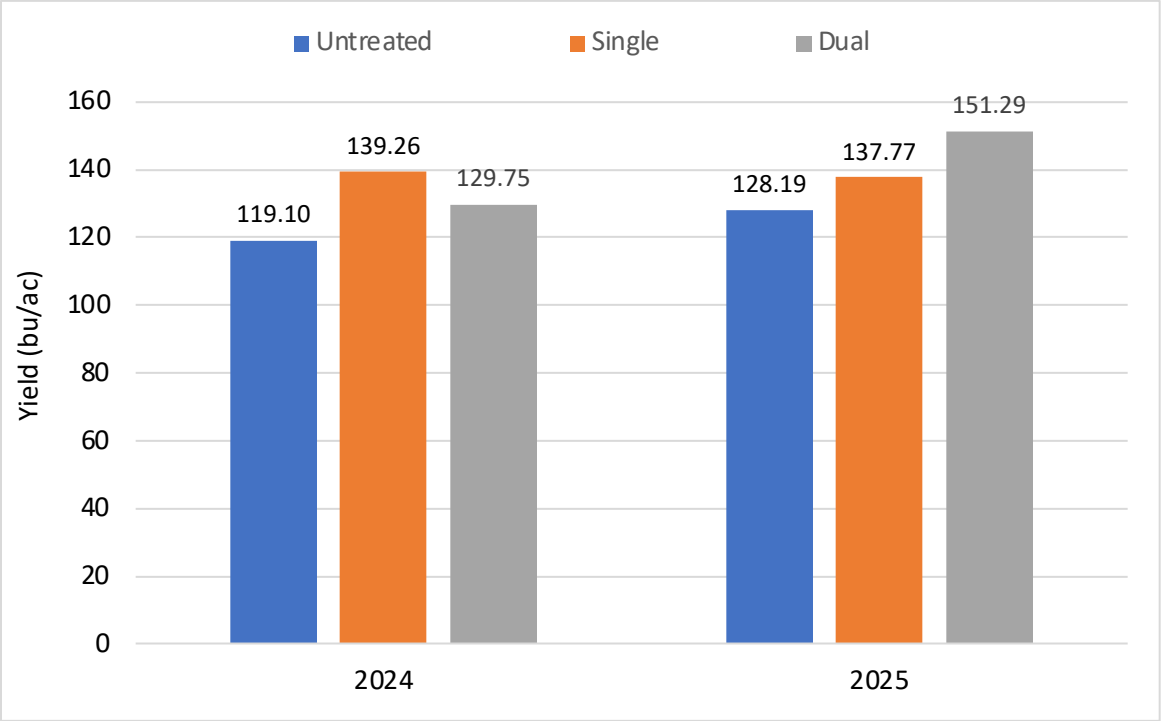




2024 and 2025 Single and Dual Applications Combined (2 sites)

Data from both sites in 2024 and 2025 were combined, with trials conducted at the same location by the same producer using consistent management practices. PGR application increased yield compared with the untreated check, while thousand kernel weight, protein, plump kernels, and thins were unaffected; test weight was slightly reduced, indicating a yield advantage with minimal impact on overall grain quality.

Treatment	Yield (bu/ac)	Thousand Kernel Weight (TKW) (g/1000)	Test Weight (TW) (kg/hL)	Protein (%)	Plumps (%)	Thins (%)
Untreated Check	123.7 b	44.5 a	62.5 a	13.0 a	91.2 a	2.5 a
Single Application	138.5 a	44.8 a	61.7 a	12.8 a	90.9 a	2.1 a
Dual Application	140.5 a	46.2 a	62.6 a	12.8 a	93.4 a	1.7 a
SED[1]	5.57	1.33	1.70	0.248	2.10	0.768
p-value[2]	0.024	0.505	0.845	0.826	0.551	0.616



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Brought to you by SaskBarley

Objective: to quantify the agronomic and economic impact of PGR (Moddus) application on barley compared to an untreated check across various management, soil, and weather conditions.

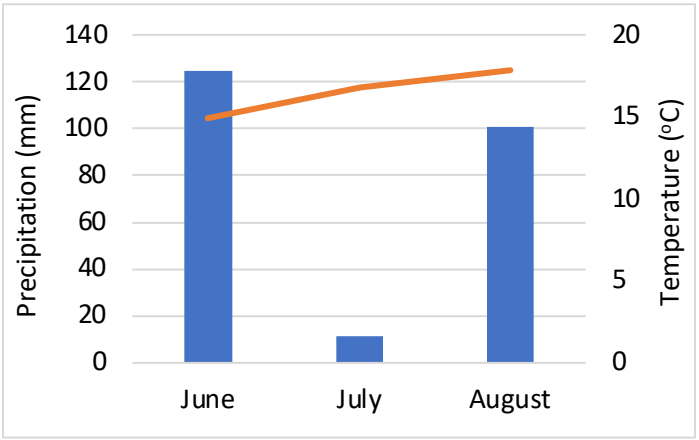
Barley Plant Growth Regulator (PGR)
(Birch Hills)

Trt #	Description
1	Untreated Check
2	PGR Application

General Trial Information

Variety	Carleton (feed)
Seeding Rate	90 lb/ac
Seed Treatment	Raxil® Pro (prothioconazole + tebuconazole + metalaxyl)
Previous Crop	Canola
Soil Organic Matter	4.5%
Spring Residual Nitrate-N	
0-6”	24 lb/ac
6-24”	39 lb/ac
Soil Texture	Medium
Seeding Date	May 23
Seeding Equipment	John Deere/Seed Master p670
Seeding Depth	1”
Seeding Speed	4.8 mph
Row Spacing	12”
Total Applied N-P-K-S (lb/ac N-P-K-S)	25 – 0 – 11 – 0
Crop Protection	May 21: Roundup® (glyphosate) + Prepass® (florasulam) June 25: Axial® Xtreme (pinoxaden + florasulam) + MCPA®

Precipitation from rain gauge and temperature from Environment Canada (Prince Albert Glass Field)



PGR Application Information

Product Name:	Moddus®
Crop Stage:	BBCH 32
Rate:	0.40 L/ac
Date:	July 4
Speed:	13.7 mph
Water Volume:	9.5 gal/ac
Sprayer Details:	John Deere 616R

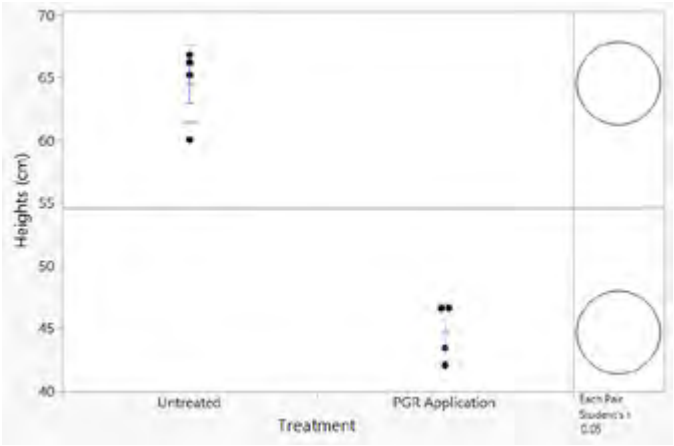
Economics

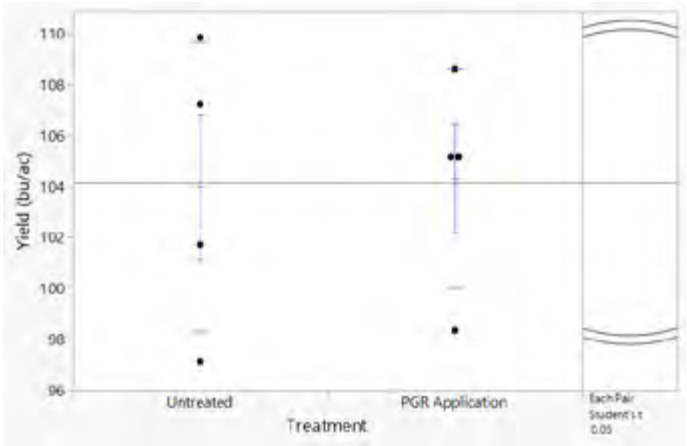
Treatment Description	PGR ($/ac)[x]	Machinery Operation ($/ac)[y]	Total Cost ($/ac)	Yield (bu/ac)	Target Price ($/bu)[z]	Gross Revenue ($/ac)	Net Revenue ($/ac)	Relative Profit/Loss ($/ac)
Untreated Check	0.00	0.00	0.00	103.98	4.81	500.14	500.14	0.00
PGR Application	16.50	9.24	25.74	104.32	4.81	501.78	476.04	-24.10

[x]2025 Local Retail, December 15, 2025 (PGR cost $16.50/ac)
[y]2024-25 Farm Machinery Custom and Rental Rate Guide, Government of Saskatchewan (avg sprayer custom rate: $9.24/ac)
[z]2025 Feed Barley, 2025 Crop Planning Guide, Government of Saskatchewan (estimated farm gate price $4.81/bu)

Results

Treatment	Height (cm)	Lodging (1=erect, 9=flat)	Yield (bu/ac)	Thousand Kernel Weight (TKW) (g/1000)	Test Weight (TW) (kg/hL)	Protein (%)	Plumps (%)	Thins (%)	Germ (%)
Untreated Check	64.6 a	1.0 a	104.0 a	41.9 a	61.3 a	12.3 a	84.2 a	2.7 b	98.5 a
PGR Application	44.7 b	1.0 a	104.3 a	41.0 a	59.2 b	12.6 a	82.5 a	4.9 a	99.2 a
SED[1]	1.67	0.0	1.22	0.801	0.394	0.210	4.14	0.393	0.619
p-value[2]	0.0013	1.0	0.796	0.366	0.013	0.219	0.697	0.0105	0.340





Summary

The PGR application significantly reduced plant height without affecting lodging or yield, which remained similar between treatments at approximately 104 bu/ac. Most grain quality parameters were unchanged; however, PGR-treated plots had lower test weight and a higher proportion of thin kernels. Overall, the PGR effectively shortened plants but provided no yield advantage and introduced minor reductions in grain quality.

To review footnote references please refer to overall trial summary on page 37.

This trial was conducted with the agronomic support of

TOMTENE SEED FARM JV

the BarleyBin Field Lab
Brought to you by SaskBarley

Barley Plant Growth Regulator (PGR)
(Davidson 1 – "Early Seeded")

Objective: to quantify the agronomic and economic impact of PGR (Moddus) application on barley compared to an untreated check across various management, soil, and weather conditions.

Trt #	Description
1	Untreated Check
2	PGR Application

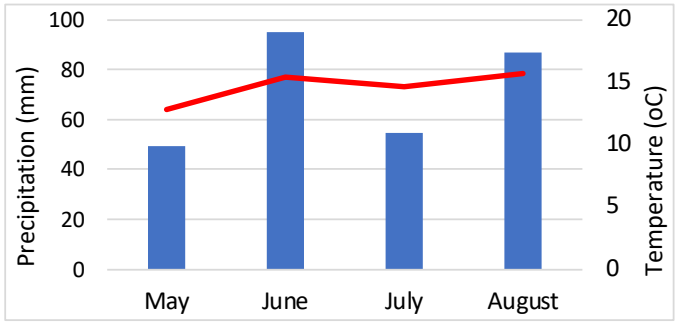
General Trial Information

Variety	AAC Synergy (malt)
Thousand Kernel Weight	43.2 g
Germination	99%
Seeding Rate	115 lb/ac
Seed Treatment	Cruiser® Vibrance Quattro (thiamethoxam, difenoconazole, sedaxane, metalaxyl-M, + fludioxonil)
Previous Crop	Canola
Soil Organic Matter	2.7%
Spring Residual Nitrate-N	
0-6"	16 lb/ac
6-24"	25 lb/ac
Seeding Date	May 6/7
Seeding Equipment	Bourgault 3320 XTC
Seeding Depth	1 ¼"
Seeding Speed	4.4 mph
Row Spacing	12"
Total Applied N-P-K-S (lb/ac N-P-K-S)	87 – 32 – 0 – 0
Crop Protection	May 3: Glyphosate June 7: Broadband (pinoxaden + florasulam) + Ikwin (fluroxypyr)

PGR Application Information

Product Name:	Moddus®
Crop Stage:	BBCH 32 – 2nd Node
Rate:	0.42 L/ac
Date:	June 17
Speed:	11 mph
Water Volume:	12 gal/ac
Sprayer Details:	John Deere

Temperature and precipitation from a local weather station



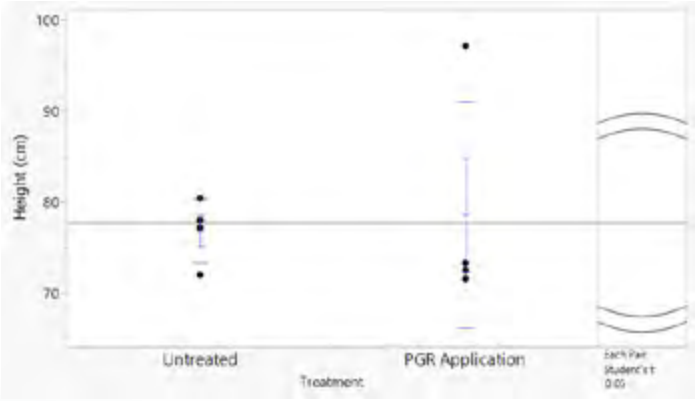
Economics

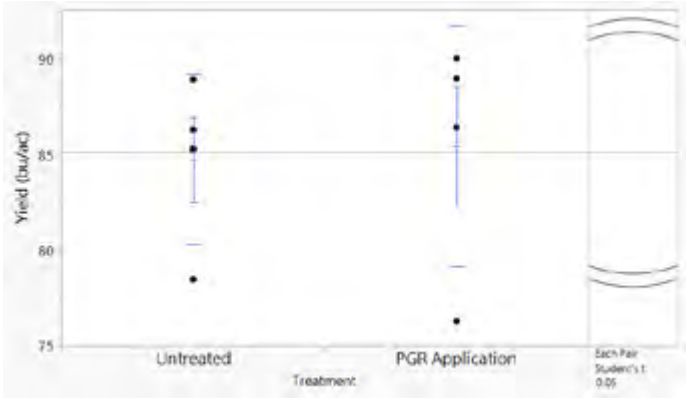
Treatment Description	PGR ($/ac)[x]	Machinery Operation ($/ac)[y]	Total Cost ($/ac)	Yield (bu/ac)	Target Price ($/bu)[z]	Gross Revenue ($/ac)	Net Revenue ($/ac)	Relative Profit/Loss ($/ac)
Untreated Check	0.00	0.00	0.00	84.8	5.90	500.32	500.32	0.00
PGR Application	16.50	9.24	25.74	85.4	5.90	503.86	478.12	-22.20

[x]2025 Local Retail, December 15, 2025 (PGR cost $16.50/ac)
[y]2024-25 Farm Machinery Custom and Rental Rate Guide, Government of Saskatchewan (avg sprayer custom rate: $9.24/ac)
[z]2025 Malting Barley, 2025 Crop Planning Guide, Government of Saskatchewan (estimated farm gate price $5.90/bu)

Results

Treatment	Height (cm)	Lodging (1=erect, 9=flat)	Yield (bu/ac)	Thousand Kernel Weight (TKW) (g/1000)	Test Weight (TW) (kg/hL)	Protein (%)	Plumps (%)	Thins (%)	Germ (%)
Untreated Check	76.8 a	1.3 a	84.8 a	46.9 a	63.4 a	12.9 a	98.3 a	0.44 a	96.1 a
PGR Application	78.6 a	1.4 a	85.4 a	46.8 a	63.0 b	12.9 a	97.9 a	0.55 a	98.0 a
SED[1]	6.04	0.315	1.02	0.360	0.066	0.139	0.212	0.053	1.45
p-value[2]	0.795	0.718	0.554	0.832	0.013	0.934	0.207	0.143	0.282





Summary

The PGR application had no significant effect on plant height, lodging, yield, or most grain quality traits. Test weight was slightly reduced, but overall, the PGR provided no meaningful agronomic or quality benefit.

To review footnote references please refer to overall trial summary on page 37.

This trial was conducted with the agronomic support of

the BarleyBin Field Lab
Brought to you by SaskBarley

Barley Plant Growth Regulator (PGR)
(Davidson 2 – "Late Seeded")

Objective: to quantify the agronomic and economic impact of PGR (Moddus) application on barley compared to an untreated check across various management, soil, and weather conditions.

Trt #	Description
1	Untreated
2	PGR Full Rate

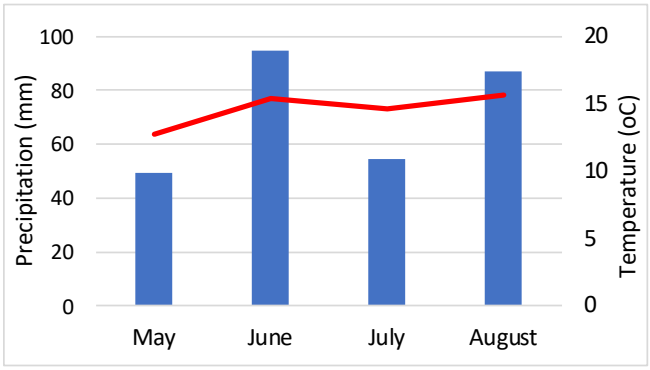
General Trial Information

Variety	AAC Synergy (malt)
Thousand Kernel Weight	43.2 g
Germination	99%
Seeding Rate	115 lb/ac
Seed Treatment	Cruiser® Vibrance Quattro (thiamethoxam, difenoconazole, sedaxane, metalaxyl-M, + fludioxonil)
Previous Crop	Lentils
Seeding Date	May 30, 2025
Seeding Equipment	Bourgault 3320 XTC
Seeding Depth	1 ¼"
Seeding Speed	4.5 mph
Row Spacing	12"
Total Applied N-P-K-S (lb/ac N-P-K-S)	87 – 32 – 0 – 0
Crop Protection	May 24: Glyphosate June 28: Broadband (pinoxaden + florasulam) + Ikwin (fluroxypyr)

PGR Application Information

Product Name:	Moddus®
Crop Stage:	BBCH growth stage 34-36
Rate:	0.42 L/ac
Date:	July 4
Speed:	11 mph
Water Volume:	12 gal/ac
Sprayer Details:	John Deere

Temperature and precipitation from a local weather station



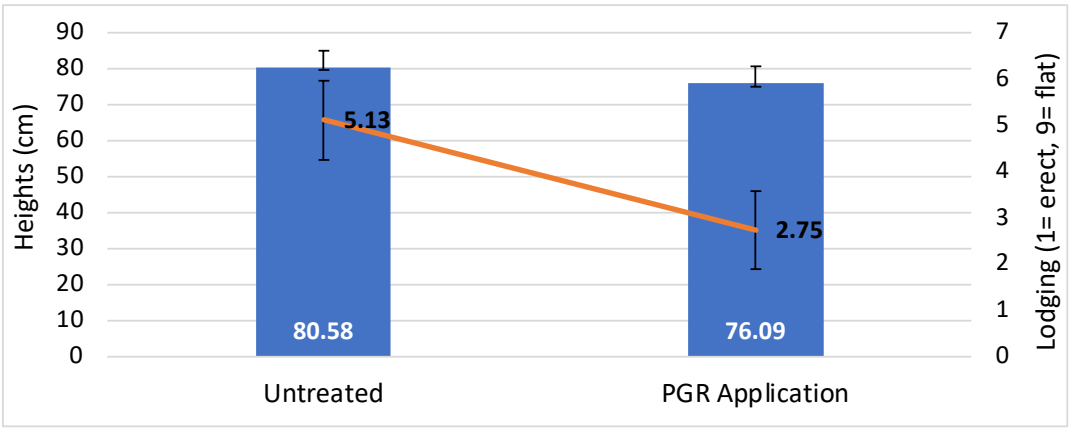
Economics

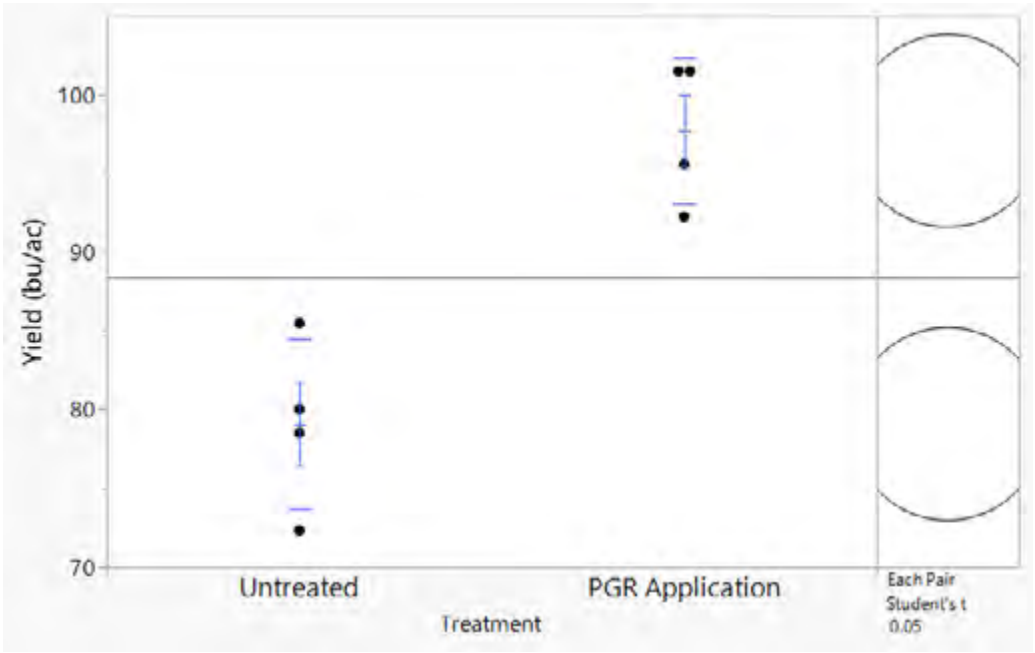
Treatment Description	PGR ($/ac)[x]	Machinery Operation ($/ac)[y]	Total Cost ($/ac)	Yield (bu/ac)	Target Price ($/bu)[z]	Gross Revenue ($/ac)	Net Revenue ($/ac)	Relative Profit/Loss ($/ac)
Untreated Check	0.00	0.00	0.00	79.1	5.90	466.69	466.69	0.00
PGR Application	16.50	9.24	25.74	97.7	5.90	576.43	550.69	84.00

[x]2025 Local Retail, December 15, 2025 (PGR cost $16.50/ac)
[y]2024-25 Farm Machinery Custom and Rental Rate Guide, Government of Saskatchewan (avg sprayer custom rate: $9.24/ac)
[z]2025 Malting Barley, 2025 Crop Planning Guide, Government of Saskatchewan (estimated farm gate price $5.90/bu)

Results

Treatment	Height (cm)	Lodging (1=erect, 9=flat)	Yield (bu/ac)	Thousand Kernel Weight (TKW) (g/1000)	Test Weight (TW) (kg/hL)	Protein (%)	Plumps (%)	Thins (%)	Germ (%)
Untreated Check	80.6 a	5.1 a	79.1 b	41.7 b	58.9 a	13.3 a	97.3 a	0.81 a	80.0 a
PGR Application	76.1 a	2.8 a	97.7 a	42.7 a	59.6 a	13.3 a	96.9 a	0.76 a	81.1 a
SED[1]	4.67	0.851	1.31	0.144	0.239	0.106	0.587	0.152	8.26
p-value[2]	0.408	0.068	0.0008	0.0075	0.055	1.00	0.486	0.764	0.903





Summary

The PGR application showed a trend toward reduced lodging and significantly increased yield and thousand kernel weight, with no adverse effects on grain quality There was a small increase in test weight that approached significance. Overall, the PGR enhanced productivity and kernel size while maintaining quality.

To review footnote references please refer to overall trial summary on page 37.

This trial was conducted with the agronomic support of

the BarleyBin Field Lab
Brought to you by SaskBarley

Barley Plant Growth Regulator (PGR) (Humboldt)

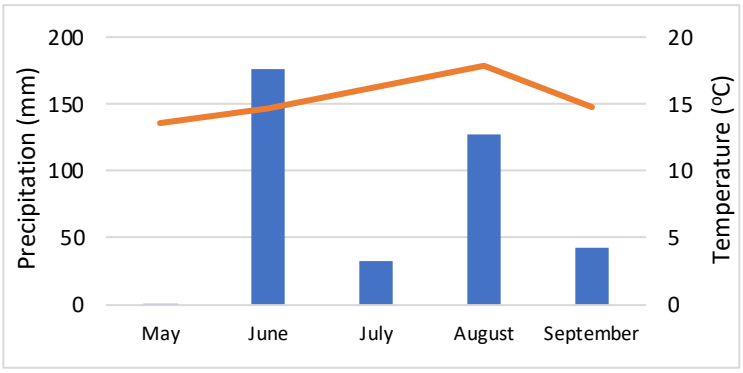
Objective: to quantify the agronomic and economic impact of PGR (Moddus) application on barley compared to an untreated check across various management, soil, and weather conditions.

Trt #	Description
1	Untreated
2	PGR Full Rate
3	PGR Split Application

General Trial Information

Variety	CDC Churchill (malt)
Seeding Rate	190 lb/ac
Seed Treatment	Raxil® (tebuconazole + metalaxyl)
Previous Crop	Canola
Soil Organic Matter	3.2 %
Spring Residual Nitrate-N	9.2 lb/ac
Seeding Date	May 13, 2025
Seeding Equipment	Bourgault 3335
Seeding Depth	1”
Seeding Speed	4.5 mph
Row Spacing	12”
Total Applied N-P-K-S (lb/ac N-P-K-S)	107 – 59 – 12 – 12
Crop Protection	May 21: Glyphosate + 2,4-D® June 9: Infinity® (pyrasulfotole + bromoxynil) + Axial® BIA (pinoxaden) July 12: Prosaro® XTR (prothioconazole + tebuconazole)

Precipitation from local weather station (May 21 – September 24)



PGR Application Information

	Single Application	Dual Application	
		1st Application	2nd Application
Product Name:	Moddus®	Moddus®	Moddus®
Crop Stage:	BBCH 31	BBCH 24	BBCH 38
Rate:	0.42 L/ac	0.21 L/ac	0.21 L/ac
Date:	June 18	June 11	June 25
Speed:	10 mph	10 mph	10 mph
Water Volume:	10 gal/ac	10 gal/ac	10 gal/ac
Sprayer Details:	Agrifac Endurance 4	Agrifac Endurance 4	Agrifac Endurance 4

Economics

Treatment Description	PGR ($/ac)[x]	Machinery Operation ($/ac)[y]	Total Cost ($/ac)	Yield (bu/ac)	Target Price ($/bu)[z]	Gross Revenue ($/ac)	Net Revenue ($/ac)	Relative Profit/Loss ($/ac)
Untreated Check	0.00	0.00	0.00	128.2	5.90	756.38	756.38	0.00
Single Application	16.50	9.24	25.74	137.8	5.90	813.02	787.28	30.90
Dual Application	16.50	18.48	34.98	151.3	5.90	892.67	857.69	101.31

[x]2025 Local Retail, December 15, 2025 (PGR cost $16.50/ac)
[y]2024-25 Farm Machinery Custom and Rental Rate Guide, Government of Saskatchewan (avg sprayer custom rate: $9.24/ac)
[z]2025 Malting Barley, 2025 Crop Planning Guide, Government of Saskatchewan (estimated farm gate price $5.90/bu)

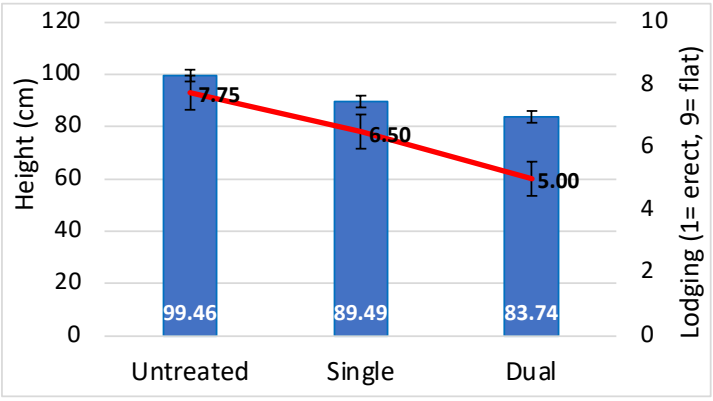
Harvestability Comments from the Producer:

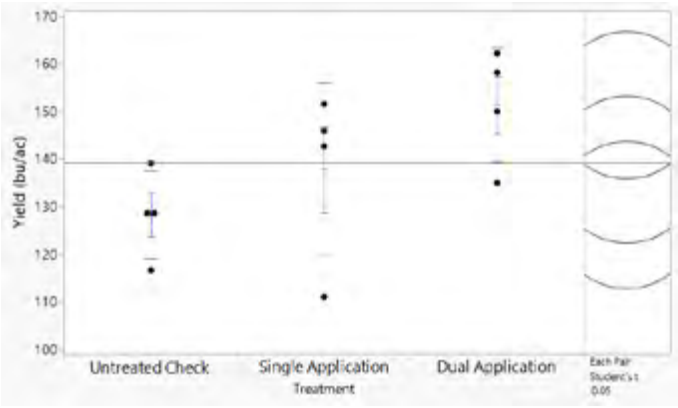
"This year's PGR trial again improved standability, with the two-pass, half-rate applied twice performing best—opposite of last year. Yield benefits were also greater this season. After a dry start, June rainfall created ideal growing conditions (13 inches total). Large differences in bushel weight were observed among treatments. A higher Moddus rate may have further improved standability and yield.

Check: 70–80% lodged; very difficult to harvest.
One Pass: 40–50% lodged after early August storms.
Two Pass: 25–40% lodged; least severe and best for harvestability."

Results

Treatment	Height (cm)	Lodging (1=erect, 9=flat)	Yield (bu/ac)	Thousand Kernel Weight (TKW) (g/1000)	Test Weight (TW) (kg/hL)	Protein (%)	Plumps (%)	Thins (%)	Germ (%)
Untreated Check	99.5 a	7.8 a	128.2 a	43.4 b	60.9 a	12.7 a	90.5 a	3.4 a	97.8 a
Single Application	89.5 b	6.5 a	137.8 a	44.0 b	62.8 a	12.8 a	93.2 a	2.1 a	95.6 a
Dual Application	83.7 c	5.0 b	151.3 a	47.0 a	62.0 a	12.4 a	94.6 a	1.7 a	97.3 a
SED[1]	2.34	0.540	10.08	1.10	1.34	0.320	2.36	1.01	1.81
p-value[2]	0.0015	0.0066	0.150	0.0387	0.322	0.480	0.263	0.244	0.527





Summary

Both PGR applications significantly reduced plant height, with dual application also reducing lodging. Yield increased with PGRs but was not statistically significant due to high variability in primarily one replication. The dual application significantly increased thousand kernel weight without affecting other grain quality traits. Overall, dual PGR treatment enhanced standability and kernel size while maintaining grain quality.

To review footnote references please refer to overall trial summary on page 37.

This trial was conducted with the agronomic support of

SWATMAPS

the BarleyBin Field Lab
Brought to you by SaskBarley

Barley Plant Growth Regulator (PGR) (Watson)

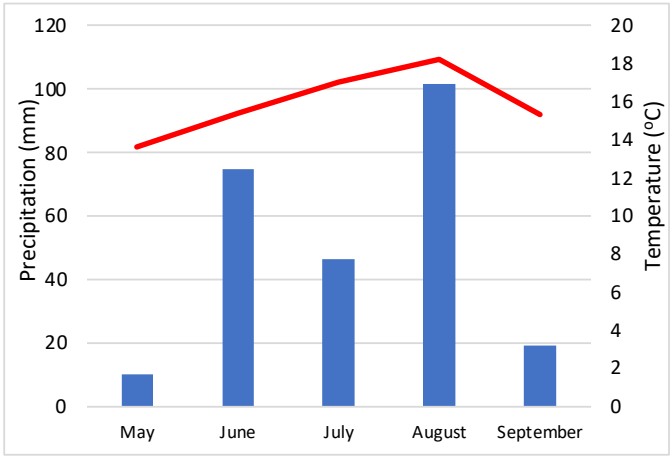
Objective: to quantify the agronomic and economic impact of PGR (Moddus) application on barley compared to an untreated check across various management, soil, and weather conditions.

Trt #	Description
1	Untreated Check
2	PGR Application

General Trial Information

Variety	CDC Copeland (malt)
Seeding Rate	100 lb/ac
Seed Treatment	Insure® (pyraclostrobin, metalaxyl + triticonazole)
Previous Crop	Canola
Seeding Date	May 11, 2025
Seeding Equipment	Bourgault 8550/3330
Seeding Depth	1 ¼”
Seeding Speed	4.5 mph
Row Spacing	12”
Total Applied N-P-K-S (lb/ac N-P-K-S)	78 – 40 – 0 – 0
Crop Protection	May 7: Avadex® (triallate), glyphosate + Bromoxynil® June 10: Momentum® (fluroxypyr + clopyralid) + Axial® (pinoxaden) July 8: Prosaro® (prothioconazole + tebuconazole)

Precipitation and temperature from Environment Canada (Leroy)



PGR Application Information

Product Name:	Moddus®
Crop Stage:	BBCH 32
Rate:	0.42 L/ac
Date:	June 25
Speed:	12 mph
Water Volume:	10 gal/ac
Sprayer Details:	Case IH 4440

Economics

Treatment Description	PGR ($/ac)[x]	Machinery Operation ($/ac)[y]	Total Cost ($/ac)	Yield (bu/ac)	Target Price ($/bu)[z]	Gross Revenue ($/ac)	Net Revenue ($/ac)	Relative Profit/Loss ($/ac)
Untreated Check	0.00	0.00	0	96.2	5.90	567.58	567.58	0.00
PGR Application	16.50	9.24	25.74	94.8	5.90	559.32	533.58	-34.00

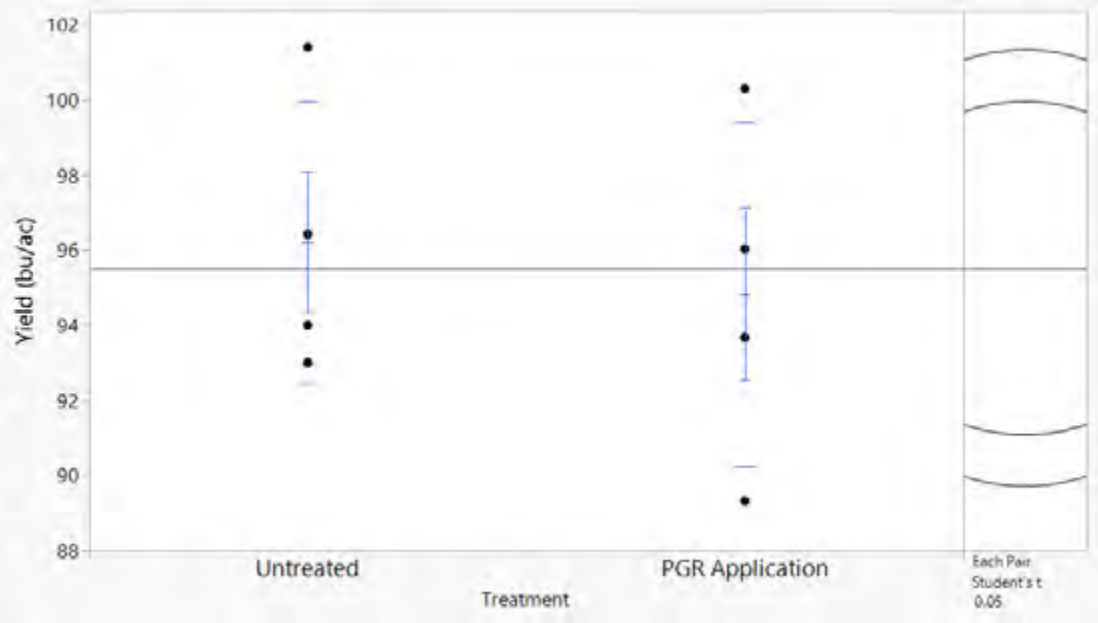
[x]2025 Local Retail, December 15, 2025 (PGR cost $16.50/ac)
[y]2024-25 Farm Machinery Custom and Rental Rate Guide, Government of Saskatchewan (avg sprayer custom rate: $9.24/ac)
[z]2025 Malting Barley, 2025 Crop Planning Guide, Government of Saskatchewan (estimated farm gate price $5.90/bu)

Producer Comments:

"There was a slight visual difference in height between the treated and untreated plots, but both maintained good standability and harvestability. Based on the results of this trial, applying the growth regulator provided no measurable benefit to the barley. It added both cost and time without improving crop performance."

Results

Treatment	Height (cm)	Yield (bu/ac)	Thousand Kernel Weight (TKW) (g/1000)	Test Weight (TW) (kg/hL)	Protein (%)	Plumps (%)	Thins (%)	Germ (%)
Untreated Check	75.0 a	96.2 a	51.1 a	63.0 a	12.6 a	98.8 a	0.46 a	98.4 a
PGR Application	73.8 a	94.8 a	50.7 a	62.9 a	12.3 a	98.8 a	0.50 a	98.2 a
SED[1]	12.59	0.788	0.465	0.103	0.189	0.228	0.093	0.183
p-value[2]	0.927	0.179	0.453	0.560	0.241	0.888	0.698	0.353



Summary

In this trial, plant height, yield, and all measured grain quality traits were similar between the untreated check and the PGR application, with no significant differences observed. This suggests that the PGR treatment did not meaningfully influence crop growth, yield, or grain quality. Overall, the crop performed consistently regardless of PGR application.

To review footnote references please refer to overall trial summary on page 37.

This trial was conducted with the agronomic support of

Jeff Mathieson