



Final Report

Demonstration of the regional impact of varietal traits and flowering timing in
spring wheat (CWRS) and durum (CWAD)

Project Number: 369-241120

Producer Group Sponsoring the Project: Saskatchewan Wheat Development Commission

Project Location(s):

- Saskatchewan Conservation Learning Centre (CLC) – Prince Albert, SK
- Wheatland Conservation Area (WCA) – Swift Current, SK
- Western Applied Research Corporation (WARC) – Scott, SK
- Indian Head Agricultural Research Foundation (IHARF) – Indian Head, SK
- Northeast Agriculture Research Foundation (NARF) – Melfort, SK
- East Central Research Foundation (ECRF) - Yorkton

Project start and end dates (month & year): April 2025 – February 2026

Project contract person & contact details:

- Robin Lokken / Zoe Galbraith, 306-960-1834, info@saskclc.ca, Manager / Assistant Manager
- Ryan Scragg, 306-961-2240, ryan_scragg@hotmail.com, Board Chair

Objectives and Rationale

Project Objectives: *Provide a short statement outlining the project objectives. Identify the key concepts this project was designed to demonstrate.*

The overall objective was to demonstrate the regional impact of breeding successes and flowering timing on crop yield in spring wheat and durum in Saskatchewan. More specific objectives include demonstrating varietal selection as a crop management tool with and without PGR and fungicide application, assessing the potential impact of different flowering timing of various spring wheat and durum varieties on crop yield under heat and drought stress, and encouraging the production of a more diverse selection of cereal varieties in Saskatchewan.

Project Rationale: *Briefly describe why this project is of interest to local producers. Why is it important to conduct this project? What are the potential beneficial outcomes? What is the perceived need?*

Spring and durum wheat are important agricultural crops in Canada. In 2023, 20.3 million tonnes of CWRS wheat were grown in Canada, representing 63% of all the wheat grown in Canada (Cereals Canada, 2024). Canada is the world's largest exporter of durum wheat, producing 4.0 million tonnes of CWAD in 2023 (Cereals Canada, 2024).

Of the wide range of varieties of durum and spring wheat available to Saskatchewan producers, only a few varieties make up a large proportion of the acres grown in the province. According to insured acreage reports, of the over 4.4 million acres of durum grown in 2023, nearly 1.1 million of those acres consisted of a single variety (Transcend) followed by 580,000+ acres of CDC Precision (Saskatchewan Crop Insurance Corporation, 2023). In other words, two varieties of durum made up 38% of the acres grown in SK. Similarly, for spring wheat, of over 7.3 million acres insured in 2023, 1.5 million of those (over 20%) consisted of a single variety (AAC Brandon) (SCIC, 2023).

Wheat growers in Saskatchewan face a number of costly production challenges throughout the growing season including lodging, disease, and insects. While producers have access to products like PGRs, fungicides and insecticides to manage these issues, selecting a suitable variety is an important component of an integrated management strategy. Many Saskatchewan producers may not consider that diversifying the varieties of wheat that they grow might address production issues and could lower their input costs.

Choosing whether to apply a PGR product can be difficult. Many popular varieties of CWRS wheat and durum are quite tall, which, combined with the application of high levels of fertility to maximize yields, increases likelihood of lodging. However, lodging risk is difficult to assess at the early growth stages where PGR products must be applied, meaning that spraying needs to happen before growers know if there will be an economic benefit to application. Producers using PGR products may also run into marketability issues, with some buyers placing restrictions on the application of PGR products, especially in specialty markets (Japp and Brenzil, 2024; Leybourne, 2024).

Insect pests cause significant damage in spring wheat and durum crops in Saskatchewan. At threshold for pesticide application, wheat midge can reduce spring wheat yields by 15% or higher if midge densities are well above threshold (Saskatchewan Agriculture, no date a). There are a number of midge tolerant wheat varieties available, sold as varietal blends of 90% midge tolerant variety and 10% refuge variety, in order to reduce the negative impact for the producer while protecting the resistant gene. Growing midge tolerant wheat is reported to provide an economic benefit to the producer of approximately \$70/ac, by improving yield and grade over older, non-tolerant wheat varieties (Midge Tolerant Wheat Stewardship Team, no date). Wheat stem sawfly damage results in economic losses for producers due to reductions in grain yield and quality. In severe infestations, some producers have estimated cutting levels of 70% of stems or higher in a field (Saskatchewan Agriculture no date b). Solid or semi-solid wheat stem varieties contain pith that has been demonstrated to reduce larval movement and increase mortality. Growing solid stem varieties may increase larval death by nearly 40% over hollow stems (Saskatchewan Agriculture no date b).

Fungicide applications can also be a challenge. Timing of application of fungicide for fusarium head blight (FHB) is critical, as the product must be applied at early flowering for maximum effectiveness (Saskatchewan Agriculture, 2024). Unfortunately, ideal timing is not always achievable due to variability within and among fields, as well as weather conditions that may delay spraying. Furthermore, FHB fungicides registered for use in wheat offer FHB suppression only, and not control (Saskatchewan Agriculture, 2024). In areas of the province with a high risk for FHB, growing a variety with some genetic resistance to FHB can provide an extra layer of protection.

Flowering is a sensitive point for plant stress. Excessive heat and drought at flowering, for example, can negatively impact wheat yield by impacting mechanisms of pollination and pollen viability (Liu et al., 2023). There is an important genetic component to a plant's ability to tolerate heat stress during flowering through strategies such as altering the time of day of flowering. Wheat genotypes that flower during the heat of the day have demonstrated seed set reductions of 16% compared to wheat varieties that flower in the early morning or late evening when temperatures are lower (Krishna Jagadish, 2020). Heat stress has the highest impact on yield when extreme temperatures occur when the flowers open, suddenly exposing the reproductive organs to heat (Krishna Jagadish, 2020). It is reasonable to expect that varietal differences in date of flowering could impact yield if daytime temperatures vary significantly day to day, which is not uncommon for Saskatchewan summers. In July 2024 at the CLC in Prince Albert, maximum daytime temperature varied by as much as 11.4°C within a 3-day period (Saskatchewan Research Council, 2024).

Another important component to varietal selection is grain protein. Sufficient grain protein is required to produce quality end products liked breads, pastas and couscous (Cereals Canada, 2024). Low grain protein can lead to economic losses for producers due to marketability issues and loss of protein premiums (Panchuk et al., 1998). While protein is closely tied to nitrogen availability and growing conditions, breeding also plays an important role as not all varieties have the same protein potential (Panchuk et al., 1998).

By conducting the proposed demonstration at a number of AgriARM sites across the province in a single year, with the incorporation of treatments that include an agronomic package of fungicide and PGR, and assessing various observations such as flower timing, height, yield and protein, this project would result in a valuable cereal extension package complete with statistically supported data. With the rising cost of pesticides and growing interest in using PGR products to manage lodging, a demonstration of select varieties and their traits of interest may be beneficial. If this project can successfully demonstrate varietal selection as a crop management tool that parallels the use of PGR and fungicide products, there is a likelihood of increasing awareness and adoption of a wider range of cereal crop varieties.

Methodology and Results

Methodology: *Fully describe how the project was set up and run. Your description should provide a clear statement of what was undertaken during this project. Include approaches, experimental design, methodology, materials, sites, etc. Major changes from the original plan should be indicated and the reason(s) for the change should be specified.*

This trial was set up as a 4-replicate split plot design. PGR and fungicide application was the main plot with varieties as the sub plot to highlight any varietal differences in height/lodging and disease resistance. The complete treatment list can be found in Table 1, with the specific traits of interest identified. Plots measured approximately 2m x 7m depending on site equipment.

Canadian western amber Durum (CWAD) was grown in Swift Current and Indian Head, while Canadian western red spring wheat (CWRS) was grown in Prince Albert, Scott, Melfort, and Yorkton. Wheat was seeded at the recommended rate for each region of the province. Fertility (NPKS) was kept non-limiting based on spring soil test results (Table 3). Both pre- and post-emergent herbicides were used to maintain weed control. The PGR product used was Manipulator and the FHB fungicide used was Miravis Era. Both were applied at label recommended rates and were applied when the majority of plots were at the recommended stage for application. Fungicide was mistakenly applied across the whole trial in Yorkton. Wheat was seeded into canola stubble across all sites. More detailed site-specific agronomic information can be found in the appendix (Table A7).



Figure 1. “Demonstration of the regional impact of varietal traits and flowering timing in spring wheat (CWRS) and durum (CWAD)” was set up as a replicated small split plot design as shown here in Swift Current.

Table 1. Treatment list for the 2025 trial “Demonstration of the regional impact of varietal traits and flowering timing in spring wheat (CWRS) and durum (CWAD)”

Treatment #	CWAD Variety	CWRS Variety	Trait of Interest	Treatment
1	AAC Schrader (intermediate)	AAC Alida VB (moderate)	FHB Resistance	PGR and FHB Fungicide Applied
2	CDC Dynamic (14.4%)	CDC Adamant VB (14.4%)	Protein	
3	CDC Vantta (79cm)	AAC Viewfield (78cm)	Height	
4	AAC Succeed VB	AAC Wheatland VB	Midge Tolerance	
5	AAC Grainland (solid)	CDC Landmark VB (semi-solid)	Stem Solidness	
6	AAC Schrader (intermediate)	AAC Alida VB (moderate)	FHB Resistance	No PGR or FHB Fungicide

7	CDC Dynamic (14.4%)	CDC Adamant VB (14.4%)	Protein
8	CDC Vantta (79cm)	AAC Viewfield (78cm)	Height
9	AAC Succeed VB	AAC Wheatland VB	Midge Tolerance
10	AAC Grainland (solid)	CDC Landmark VB (semi-solid)	Stem Solidness

Data collected included spring plant density, flower timing, plant height, yield, and grain protein. Spring plant density was determined by counting the number of plants in 2 x 1m rows per plot after emergence was complete. Flower timing was recorded as the date of the onset of flowering for each plot. Plant height was measured to the nearest cm from two locations per plot at physiological maturity. Yield was harvested with small plot combines and adjusted to 14.5% moisture. Grain protein was measured in house using NIR technology. Lodging data was also included for Indian Head and Sawfly damage was recorded for Swift Current.

Data analysis was completed by ANOVA using Statistix 10 software. Post-hoc tests used were LSD at the p=0.05 level unless otherwise indicated. Co-efficient of variation (CV) is reported along with p-values.

Results: Present and discuss any project results, including any data or measurements taken to evaluate the demonstration. List extension activities such as field days or workshops. List the activity, the date it occurred and the number of people who attended. Identify any other materials such as posters, pamphlets, video etc. that have been produced to describe this project and where those items have been displayed. Estimate the number of producers who have viewed these items.

Weather

Table 2. Weather data from six Saskatchewan sites investigating the regional impact of varietal traits and flowering timing in spring wheat and durum.

Location	Year	April	May	June	July	August	Sept	Avg/Total
--- Total Precipitation (mm) ---								
Indian Head	2025	29.2	42.6	39.4	27.1	26.9	43.1	208.3
	Long term	22.6	51.7	77.4	63.8	51.2	35.3	302.0
Melfort	2025	-	4.8	93.2	25.9	113.5	20.3	257.7
	1997-2021	-	33.4	79.5	69.6	45.9	36.0	264.4
Prince Albert	2025	-	2.2	137.6	8.6	51.2	3.8	203.4
	2015-2024	-	36.5	66.8	61.3	43.6	30.7	260.0
Scott	2025	6.3	11.8	103.7	28.7	64.5	64.5	279.5
	1985-2014	24.4	38.9	69.7	69.4	48.7	26.5	277.6
Swift Current	2025	39.5	34.2	31.3	78.2	92.6	0.8	277.0
	2015-2024	22.5	47.5	56.0	56.3	38.0	32.0	252.0

Yorkton	2025	-	23.6	63.4	36.8	71.2	-	195.0
	1981-2010	-	51.0	80.0	78.0	62.0	-	272.0
--- Mean Temperature (°C) ---								
Indian Head	2025	2.8	12.7	15.3	17.0	17.8	15.3	13.5
	Long term	4.2	10.8	15.8	18.2	17.4	11.5	13.0
Melfort	2025	-	13.8	15.0	17.0	18.0	15.0	15.8
	1997-2021	-	10.1	15.2	17.8	16.7	11.7	14.3
Prince Albert	2025	-	11.2	12.7	14.9	17.1	13.9	14.0
	2015-2024	-	11.2	16.0	18.3	16.7	11.6	14.8
Scott	2025	3.6	12.9	14.6	15.8	17.4	17.5	13.6
	1985-2014	3.8	10.8	14.8	17.3	16.3	11.2	12.4
Swift Current	2025	6.1	13.1	15.9	18.0	19.0	16.7	14.8
	2015-2024	4.0	11.9	16.4	19.1	18.7	14.0	14.0
Yorkton	2025	-	12.4	15.7	17.5	18.3	-	16.0
	1981-2010	-	10.4	15.5	17.9	17.1	-	15.2

Overall, all sites were warmer or similar to their average temperatures (Table 2). However, Prince Albert was cooler than normal in June and July. Freezing temperatures occurred June 5, 9 and 11, and it was a record-breaking year for smoke hours resulting from forest fires, with 252 smoke hours recorded by July 24. For precipitation, Melfort, Scott, and Swift Current received close to or above average long-term precipitation. Total precipitation was only 78%, 72%, and 69% of the long-term average at Prince Albert, Yorkton, and Indian Head, respectively. Prince Albert received the majority of its summer precipitation in late June over a period of 1.5 weeks. Conditions were dry at seeding for Scott, Prince Albert and Melfort. Although, early spring moisture was good in Swift Current, limited precipitation in May through till July was too late for any crops seeded in the first half of May. This wheat varietal project was seeded late April in Swift Current, and as a result yielded low. Many sites reported patchy emergence due to dry soil conditions, and/or challenges dealing with uneven maturity and second growth that resulted from delayed rains.

Soil Test Results

Table 3. Spring soil test results from the six Saskatchewan sites investigating the regional impact of varietal traits and flowering timing in spring wheat and durum.

Depth (cm)	N (lb/ac)	P (ppm)	K (ppm)	S (lb/ac)	OM (%)	pH	Salts (mmho/cm)
Indian Head							
0 to 15	8	13	781	17.9	5.5	7.5	0.62
15 to 60	15			26.9		8.1	0.54
Melfort							
0 to 15	21	12	428	14	8.4	6.1	0.26
15 to 30	15			78		7	0.39
Prince Albert							
0 to 15	24	5	233	34	4.6	5.7	0.18

15 to 30	54			186		7.8	0.35
Scott							
0 to 15	14	17	218	80	3.5	5.3	0.28
15 to 60	15			78		7.7	0.29
Swift Current							
0 to 15	35	11	244	16	2.5	7.4	0.45
15 to 60	51			84		8.1	0.39
Yorkton							
0 to 15	19	9	260	58	5.8	7.8	0.46
15 to 60	19			120+		7.9	1.59

Data Analysis

Plant Density

For CWRS, Landmark had the greatest plant stands across all four sites (Table 4). Scott, Yorkton and Prince Albert had similar plant stands (210 – 219 plants/m²), while plant stands were lower at the Melfort research site (141 plants/m²). For Durum, plant stands were lower at Swift Current (119 plants/m²) than Indian Head (277 plants/m²) (Table 5). There were no differences in cultivar emergence in Swift Current, while AAC Schrader and Succeed had the best emergence in Indian Head.

Table 4. Statistical analyses and treatment means for plant density of different spring wheat varieties across Saskatchewan in 2025. Means within a column followed by the same letter do not significantly differ (LSD, $P \leq 0.05$).

Product (PGR and FHB)	Plant density (plants/m²)			
	Melfort	Scott	Prince Albert	Yorkton
Applied	143	215 b	215	210
Not applied	138	222 a	205	215
Variety				
AAC Alida VB	140 b	221 ab	192 b	218
AAC Viewfield	113 c	195 c	223 a	215
AAC Wheatland VB	128 bc	232 a	216 ab	217
CDC Adamant VB	151 ab	213 b	191 b	192
CDC Landmark VB	173 a	233 a	230 a	222
Product * Variety				
AAC Alida VB with product	133	214	196	216
AAC Viewfield with product	111	198	224	208
AAC Wheatland VB with product	137	224	224	215
CDC Adamant VB with product	157	211	196	187
CDC Landmark VB with product	177	231	239	224
AAC Alida VB without product	148	229	188	219
AAC Viewfield without product	116	191	222	222
AAC Wheatland VB without product	118	240	208	219

CDC Adamant VB without product	144	215	185	197
CDC Landmark VB without product	169	236	222	219
Product (p-value)	0.7132	0.0261	0.0891	0.7161
Variety (p-value)	0.0014	0.0002	0.0133	0.1451
Product * Variety (p-value)	0.6736	0.5855	0.9814	0.9521
Grand Mean	141	219	210	212
CV	23.73	9.52	13.45	14.17

Table 5. Statistical analyses and treatment means for plant density of different durum wheat varieties across Saskatchewan in 2025. Means within a column followed by the same letter do not significantly differ (LSD, $P \leq 0.05$).

Product (PGR and FHB)	Plant density (plants/m²)	
	Indian Head	Swift Current
Applied	281	119
Not applied	273	119
Variety		
AAC Grainland	266 b	112
AAC Schrader	291 a	121
AAC Succeed	292 a	121
CDC Dynamic	265 b	124
CDC Vantta	271 b	119
Product * Variety		
AAC Grainland with product	272	111
AAC Schrader with product	291	121
AAC Succeed with product	304	120
CDC Dynamic with product	267	124
CDC Vantta with product	271	118
AAC Grainland without product	261	112
AAC Schrader without product	290	120
AAC Succeed without product	281	121
CDC Dynamic without product	262	123
CDC Vantta without product	271	120
Product (p-value)	0.0969	0.9698
Variety (p-value)	0.0077	0.362
Product * Variety (p-value)	0.6847	0.9975
Grand Mean	277	119
CV	7.91	10.62

Flowering

There were no differences across the cultivars for time of flowering in both Melfort and Prince Albert; however, CDC Landmark flowered between 1.5 – 3 days earlier than other cultivars at both Scott and Yorkton locations (Table 6). AAC Viewfield was the latest to flower in Yorkton. AAC Alida was the latest to flower in Scott. Swift Current had no difference in flowering time of Durum cultivars, but CDC Vantta flowered 4-5 days later than all other cultivars in Indian Head (Table 7).

Excessive heat and drought at flowering can negatively impact wheat yield. It is difficult to discern if differences in flowering timing in this demo had an effect on yield at any of the sites. It may be possible that heat and drought were not an issue in 2025 across the sites at flower timing or other factors may have contributed more to yield losses or gains.

Table 6. Statistical analyses and treatment means for days to flowering of different spring wheat varieties across Saskatchewan in 2025. Means within a column followed by the same letter do not significantly differ (LSD, $P \leq 0.05$).

Product (PGR and FHB)	Days to Flowering			
	Melfort	Scott	Prince Albert	Yorkton
Applied	57.5	56.8	48.1	47.2
Not applied	57.4	56.7	48	46.5
Variety				
AAC Alida VB	57.1	57.4 a	48.6	47 bc
AAC Viewfield	57.6	56.5 bc	49.1	48 a
AAC Wheatland VB	57.3	56.8 ab	48.9	47 c
CDC Adamant VB	57.5	57.1 ab	46.9	47 b
CDC Landmark VB	57.5	55.9 c	46.5	45 d
Product * Variety				
AAC Alida VB with product	57	57.5	48.8	48
AAC Viewfield with product	57.5	56.8	49.5	49
AAC Wheatland VB with product	57.3	56.5	49	47
CDC Adamant VB with product	57.5	57	47	48
CDC Landmark VB with product	57.5	56	46	45
AAC Alida VB without product	57.3	57.3	48.5	47
AAC Viewfield without product	57.8	56.3	48.8	47
AAC Wheatland VB without product	57.3	57	48.8	47
CDC Adamant VB without product	57.5	57.3	46.8	47
CDC Landmark VB without product	57.5	55.8	47	45
Product (p-value)	0.391	0.8893	0.9105	0.4316
Variety (p-value)	0.1007	0.0015	0.1315	<0.0001
Product * Variety (p-value)	0.9109	0.5589	0.9652	0.2015
Grand Mean	57	56.7	48	46.8
CV	0.86	1.54	5.66	3.32

Table 7. Statistical analyses and treatment means for days to flowering of different durum wheat varieties across Saskatchewan in 2025. Means within a column followed by the same letter do not significantly differ (LSD, $P \leq 0.05$).

Product (PGR and FHB)	Days to Flowering	
	Indian Head	Swift Current
Applied	64.9	71
Not applied	64.2	71
Variety		
AAC Grainland	64 b	71
AAC Schrader	64 b	71
AAC Succeed	63 b	71
CDC Dynamic	64 b	70
CDC Vantta	68 a	71
Product * Variety		
AAC Grainland with product	64	71
AAC Schrader with product	64	71
AAC Succeed with product	64	70
CDC Dynamic with product	64	70
CDC Vantta with product	68	71
AAC Grainland without product	63	71
AAC Schrader without product	63	71
AAC Succeed without product	63	71
CDC Dynamic without product	64	71
CDC Vantta without product	68	71
Product (p-value)	0.0979	0.3534
Variety (p-value)	<0.0001	0.1529
Product * Variety (p-value)	0.5319	0.89
Grand Mean	64.6	71
CV	2.86	0.99

Height

Across all sites, except for Swift Current, the application of product resulted in decreased plant height, likely attributed to the PGR (Table 8). In Yorkton, Fungicide was mistakenly applied to all treatments, so the difference in height can be directly attributed to the use of PGR. Plant height was decreased by as low as 3 cm in Scott and up to 11 cm in CWRS at Melfort and Durum at Indian Head (Table 9). There was also a variety effect on plant height across all sites. AAC Alida was consistently the tallest CWRS variety and AAC Schrader the tallest Durum variety. AAC Viewfield was the shortest CWRS variety and CDC Vantta the shortest durum. Both AAC Viewfield and CDC Vantta were selected for this demonstration for the shorter height trait. Indian Head was the only site that had an interaction effect between the application of product and variety. AAC Succeed appears to respond well to PGR as plant height was reduced by an impressive 17 cm with the use of PGR.

Although not a required measurement for this demonstration, Indian Head also observed and recorded differences in lodging (Table A5). All durum varieties except for CDC Vantta responded to applied product resulting in reduced lodging. CDC Vantta had minimal lodging and as mentioned was the shortest durum variety grown in this demo. This provides evidence that selecting for varietal traits is a valuable tool and could eliminate the need to apply a PGR in crop.

Table 8. Statistical analyses and treatment means for plant height of different spring wheat varieties across Saskatchewan in 2025. Means within a column followed by the same letter do not significantly differ (LSD, $P \leq 0.05$).

		Plant Height (cm)			
<i>Product (PGR and FHB)</i>	Melfort	Scott	Prince Albert	Yorkton	
Applied	62 b	75 b	68 b	67 b	
Not applied	73 a	78 a	74 a	75 a	
<i>Variety</i>					
AAC Alida VB	74 a	81 a	76 a	77 a	
AAC Viewfield	65 c	73 d	67 c	65 c	
AAC Wheatland VB	69 b	74 cd	71 b	72 b	
CDC Adamant VB	64 c	75 c	70 bc	71 b	
CDC Landmark VB	67 bc	77 b	69 bc	71 b	
<i>Product * Variety</i>					
AAC Alida VB with product	68	80	73	72	
AAC Viewfield with product	59	72	66	61	
AAC Wheatland VB with product	66	74	68	70	
CDC Adamant VB with product	59	72	67	67	
CDC Landmark VB with product	60	76	64	68	
AAC Alida VB without product	80	83	80	82	
AAC Viewfield without product	71	75	69	69	
AAC Wheatland VB without product	72	74	73	75	
CDC Adamant VB without product	70	78	73	75	
CDC Landmark VB without product	73	79	74	74	
Product (p-value)	0.0043	0.0094	0.0082	0.0146	
Variety (p-value)	<0.0001	<0.0001	<0.0001	<0.0001	
Product * Variety (p-value)	0.2415	0.0776	0.1671	0.791	
Grand Mean	68	76.1	70.5	71.2	
CV	10.61	3.95	7.46	9.85	

Table 9. Statistical analyses and treatment means for plant height of different durum wheat varieties across Saskatchewan in 2025. Means within a column followed by the same letter do not significantly differ (LSD, $P \leq 0.05$).

		Plant Height (cm)	
<i>Product (PGR and FHB)</i>	Indian Head	Swift Current	
Applied	73 b	58.4	
Not applied	84 a	60.4	
<i>Variety</i>			

AAC Grainland	80 b	61ab
AAC Schrader	82 a	63a
AAC Succeed	79 b	60b
CDC Dynamic	80 b	59b
CDC Vantta	71 c	54c
<i>Product * Variety</i>		
AAC Grainland with product	75 e	60
AAC Schrader with product	78 d	63
AAC Succeed with product	70 f	58
CDC Dynamic with product	76 e	58
CDC Vantta with product	67 g	54
AAC Grainland without product	85 bc	62
AAC Schrader without product	87 ab	64
AAC Succeed without product	87 a	62
CDC Dynamic without product	85 c	60
CDC Vantta without product	74 e	54
Product (p-value)	0.0003	0.3529
Variety (p-value)	<0.0001	<0.0001
Product * Variety (p-value)	<0.0001	0.5471
Grand Mean	78.4	59.4
CV	9.14	9.61

Grain Yield

Table 10. Statistical analyses and treatment means for yield of different spring wheat varieties across Saskatchewan in 2025. Means within a column followed by the same letter do not significantly differ (LSD, $P \leq 0.05$).

<i>Product (PGR and FHB)</i>	Yield (kg/ha)			
	Melfort	Scott	Prince Albert	Yorkton
Applied	5213 a	3971	3866	5430
Not applied	4718 b	3827	4072	5348
<i>Variety</i>				
AAC Alida VB	4883 b	3793 b	3777	5476 ab
AAC Viewfield	5400 a	4321 a	4247	5085 b
AAC Wheatland VB	4936 b	3497 c	3927	5978 a
CDC Adamant VB	4750 b	3953 b	3911	5191 b
CDC Landmark VB	4858 b	3930 b	3983	5217 b
<i>Product * Variety</i>				
AAC Alida VB with product	4958	3744	3597	5562
AAC Viewfield with product	5553	4449	4217	5036
AAC Wheatland VB with product	5263	3643	3843	5836
CDC Adamant VB with product	5097	3936	3896	5480
CDC Landmark VB with product	5193	4083	3779	5238
AAC Alida VB without product	4808	3843	3958	5390
AAC Viewfield without product	5246	4192	4277	5134

AAC Wheatland VB without product	4610	3351	4012	6119
CDC Adamant VB without product	4402	3969	3927	4902
CDC Landmark VB without product	4523	3777	4186	5196
Product (p-value)	0.0124	0.2581	0.3738	0.6133
Variety (p-value)	0.0002	<0.0001	0.0615	0.0111
Product * Variety (p-value)	0.0921	0.2391	0.6625	0.512
Grand Mean	4965	3899	3978	5389
CV	8.51	9.13	10.3	15.89

Yorkton with CWRS and Indian Head with Durum had excellent yields of 5389 kg/ha (80 bu/ac) and 5638 (84 bu/ac) respectively. Scott and Prince Albert had similar yields of about 3900 kg/ha (59 bu/ac) and Swift Current had the lowest yield at 2286 kg/ha (34 bu/ac). Melfort and Indian Head had increased yields of +495 kg/ha (7.2 bu/ac) and +419 kg/ha (6.2 bu/ac) respectively in response to the use of PGR and fungicide. Although it is not possible to decipher if the results were due to one product over the other, both did have reduced height likely attributed to the PGR. Yield differences due to variety occurred in Melfort, Scott, Yorkton and Swift Current. AAC Viewfield was the highest yielding CWRS variety across all sites except for Yorkton, where AAC Wheatland and AAC Alida were the top yielders. Opposite to Yorkton, AAC Wheatland in Scott was the lowest yielding variety.

For Durum, AAC Schrader was the top performer for yield. There were no differences in yield for durum varieties in Indian Head, however, AAC Succeed and CDC Dynamic were the poorest yielding varieties for Swift Current.

Table 11. Statistical analyses and treatment means for yield of different durum wheat varieties across Saskatchewan in 2025. Means within a column followed by the same letter do not significantly differ (LSD, $P \leq 0.05$).

Product (PGR and FHB)	Yield (kg/ha)	
	Indian Head	Swift Current
Applied	5848 a	2527
Not applied	5429 b	2045
Variety		
AAC Grainland	5593	2421 ab
AAC Schrader	5777	2724 a
AAC Succeed	5734	1991 c
CDC Dynamic	5551	2097 c
CDC Vantta	5536	2198 bc
Product * Variety		
AAC Grainland with product	5794	2449
AAC Schrader with product	6120	3072
AAC Succeed with product	5919	2123
CDC Dynamic with product	5787	2378
CDC Vantta with product	5618	2615
AAC Grainland without product	5393	2392
AAC Schrader without product	5435	2375
AAC Succeed without product	5548	1858

CDC Dynamic without product	5315	1816
CDC Vantta without product	5455	1782
Product (p-value)	0.0288	0.104
Variety (p-value)	0.1064	0.0005
Product * Variety (p-value)	0.2145	0.0976
Grand Mean	5638.3	2286.1
CV	7.72	29.33

Protein

At only two of the six sites, Melfort (CWRS) and Indian Head (Durum), there was a reduction in protein content of 0.5 % when PGR and fungicide product was applied (Table 12 and 13). For all sites there were variety effects on protein content. Across the four sites that grew spring wheat, Adamant consistently had the highest, or was comparable to the highest protein. AAC Alida also had a higher protein content in Melfort, Scott and Prince Albert. For the two sites that grew durum, Dynamic produced the highest protein. Both Dynamic and Adamant were selected for the desired trait of having an expected higher protein content.

These protein responses are not unsurprising given that those varieties with higher protein content tended to be lower yielding varieties at each respective site. While there were similar varietal trends across all sites, some varieties' performance varied by site.

The yield gains resulting from use of PGR and fungicide at both Melfort and Indian Head resulted in reduced protein content at these sites. Indian Head was the only site to have an interesting interaction suggesting that this protein response to product application of PGR and fungicide differed with varieties. For example, PGR and fungicide application did not significantly affect protein for Vantta, but there was a strong response with Succeed, which had responded much more strongly to the PGR when analyzing height results.

Table 12. Statistical analyses and treatment means for protein of different spring wheat varieties across Saskatchewan in 2025. Means within a column followed by the same letter do not significantly differ (LSD, $P \leq 0.05$).

Protein (%)				
<i>Product (PGR and FHB)</i>	Melfort	Scott	Prince Albert	Yorkton
Applied	17.29 b	15.22	14.33	15.68
Not applied	17.99 a	15.28	14.12	15.71
<i>Variety</i>				
AAC Alida VB	18.01 a	15.38 ab	14.35 a	15.66 b
AAC Viewfield	17.21 c	14.63 c	14.25 a	15.88 ab
AAC Wheatland VB	17.50 c	15.57 a	13.65 b	14.79 c
CDC Adamant VB	17.91 ab	15.54 a	14.57 a	15.97 a
CDC Landmark VB	17.54 bc	15.13 b	14.28 a	15.81 ab
<i>Product * Variety</i>				
AAC Alida VB with product	17.6	15.53	14.5	15.8
AAC Viewfield with product	16.83	14.64	14.33	15.94
AAC Wheatland VB with product	17.3	15.69	13.72	14.86
CDC Adamant VB with product	17.45	15.35	14.8	15.94

CDC Landmark VB with product	17.25	14.9	14.32	15.84
AAC Alida VB without product	18.43	15.24	14.2	15.53
AAC Viewfield without product	17.6	14.63	14.16	15.82
AAC Wheatland VB without product	17.7	15.45	13.58	14.72
CDC Adamant VB without product	18.38	15.74	14.34	16.01
CDC Landmark VB without product	17.83	15.35	14.25	15.78
Product (p-value)	0.0122	0.7024	0.3951	0.5819
Variety (p-value)	0.0018	<0.0001	0.0009	<0.0001
Product * Variety (p-value)	0.652	0.0150*	0.869	0.6859
Grand Mean	17.6	15.25	14.22	15.62
CV	3.35	3.18	4.51	3.38

Table 13. Statistical analyses and treatment means for protein of different durum wheat varieties across Saskatchewan in 2025. Means within a column followed by the same letter do not significantly differ (LSD, $P \leq 0.05$).

Protein (%)		
<i>Product (PGR and FHB)</i>	Indian Head	Swift Current
Applied	13.49 b	16.93
Not applied	13.92 a	17.48
<i>Variety</i>		
AAC Grainland	13.88 a	17.40 b
AAC Schrader	13.61 b	16.62 d
AAC Succeed	13.85 a	17.15 bc
CDC Dynamic	14.01 a	17.98 a
CDC Vantta	13.17 c	16.90 cd
<i>Product * Variety</i>		
AAC Grainland with product	13.71	17.34
AAC Schrader with product	13.24	16.28
AAC Succeed with product	13.59	17.09
CDC Dynamic with product	13.75	17.59
CDC Vantta with product	13.17	16.38
AAC Grainland without product	14.04	17.46
AAC Schrader without product	13.98	16.96
AAC Succeed without product	14.12	17.21
CDC Dynamic without product	14.28	18.38
CDC Vantta without product	13.17	17.41
Product (p-value)	0.0354	0.1277
Variety (p-value)	<0.0001	<0.0001
Product * Variety (p-value)	0.0022*	0.0843
Grand Mean	13.7	17.21
CV	4.32	4.85

Sawfly Damage

Sawfly damage was noted during plant height measurements in Swift Current on August 8th (Figure 2 and Table A6). Ratings were completed, and % of plot showing sawfly damage was recorded (range 0-8%). Interestingly, there were effects detected due to product application of PGR and fungicide, varietal effects and an interaction effect. The use of product appears to have reduced sawfly damage in AAC Succeed and CDC Dynamic. AAC Grainland had the least amount of damage recorded, with CDC Vantta also having less visible damage. AAC Grainland was a variety selected to showcase in this demo for its solid stem characteristics. Using solid stem varieties of durum is one of the limited options available to growers to deal with sawfly pressure. The pith reduces movement and development of sawfly larvae, increasing their mortality (Saskatchewan Agriculture; no date b).

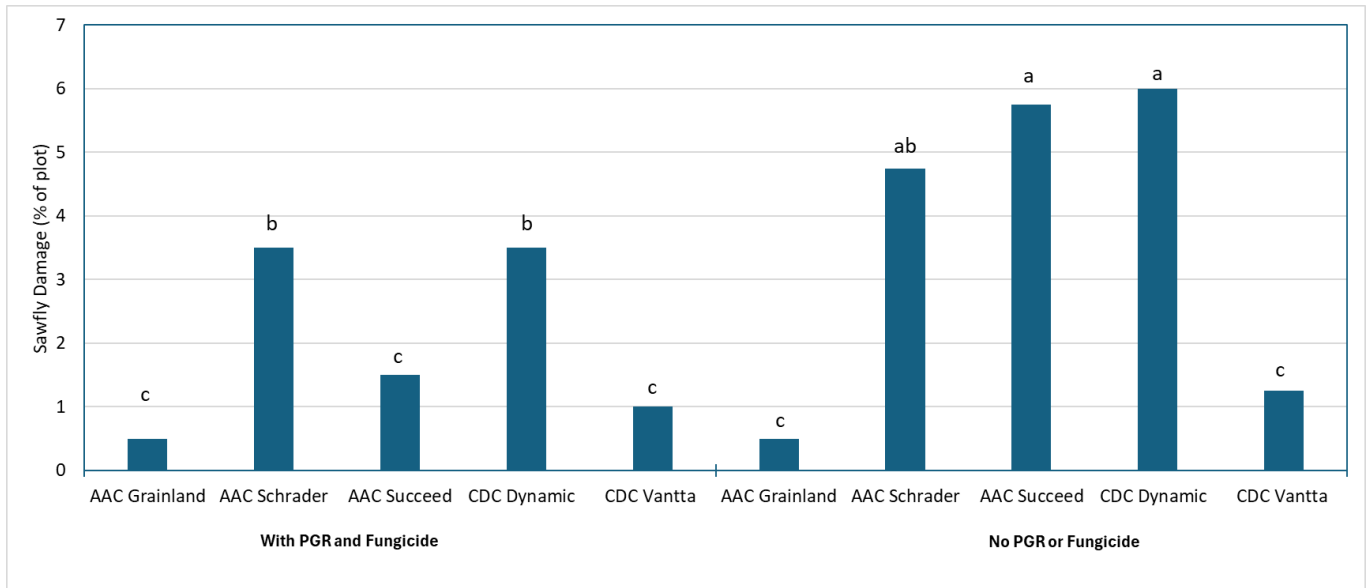


Figure 2. Sawfly damage observed in durum varieties in Swift Current in 2025 ($p < 0.05$).

Extension Events

Host	Activity	Date	Attendance #
NARF – Melfort Gazali Issah (SWDC) presented	NARF and AAFC Joint Field Day	July 23, 2025	126
WCA – Swift Current	SW Terminal Agronomist Training Session	August 7, 2025	18
CLC – Prince Albert	Upcoming Crop Talk Winter Event	February 11, 2025	75 (estimate)
IHARF - C. Holzapfel plot tour / presentation	Indian Head Crop Management Field Day	July 15, 2025	157

C. Holzapfel (IHARF) plot tour	BASF Global Herbicide Group / IHARF Plot Tour	July 16, 2025	26
C. Holzapfel (IHARF) plot tour	SaskWheat / IHARF Plot Tour	August 5, 2025	9
WARC – Scott, SK	WARC and AAFC Field Day	July 9 2025	185

Conclusions and Recommendations

Highlight significant conclusions based on the discussion and analysis provided in the previous section with emphasis on the Research Project objectives specified above; also provide recommendations for the application and adoption of the Research Project results and identify any further research, development and communication needs, if applicable.

The overall objective was to demonstrate the regional impact of breeding successes and flowering timing on crop yield in spring wheat and durum in Saskatchewan. While difficult to discern if differences in flowering timing had an effect on yield in this demonstration, the difference in timing of some varieties does indicate that it could be possible for specific varieties to flower during more or less desirable weather conditions. CDC Landmark flowered 1.5-3 days earlier in Scott and Yorkton, while CDC Vantta, a durum wheat, flowered 4-5 days later in Indian Head. It is possible for large temperature fluctuations to occur within that timeframe. In July 2024 at the CLC in Prince Albert, maximum daytime temperature varied by as much as 11.4°C within a 3-day period (Saskatchewan Research Council, 2024).

It was possible to demonstrate some of the breeding successes with this demonstration, particularly plant height, protein and stem solidness. The application of PGR and varietal differences had an effect on plant height across all sites. AAC Succeed appears to respond well to PGR as plant height was reduced by an impressive 17 cm in Indian Head. This highlights how some varieties can have a better response to the use of a PGR. Both AAC Viewfield and CDC Vantta were selected for this demonstration for shorter height trait and performed as such across all sites. This provides evidence that selecting for varietal traits is a valuable tool and could eliminate/reduce the need to apply a PGR in crop.

Wheat yields ranged between 2286 kg/ha (34 bu/ac) in Swift Current and 5638 (84 bu/ac) in Indian Head. Melfort and Indian Head were the only sites where a yield increase resulted from the use of PGR and Fungicide. Unfortunately, we cannot separate out if this yield response was due to the fungicide or PGR alone. This yield increase at both sites also resulted in a protein decrease of 0.5%. Yield differences did occur due to variety with AAC Viewfield being the highest yielding CWRS variety across most sites and AAC Schrader the top performing Durum variety.

CDC Adamant consistently had the highest protein content across spring wheat sites and Dynamic had the greatest protein content for durum sites. Both of these varieties were selected for higher protein content.

Swift Current identified sawfly damage of up to 8% within plot. Interestingly, there were effects detected due to product application (fungicide and PGR), varietal effects and an interaction effect. The use of product may have reduced sawfly damage in AAC Succeed and CDC Dynamic. AAC Grainland had the least amount of damage recorded and was a variety selected to showcase in this demo for its solid stem

characteristics. Using solid stem varieties of durum is one of the limited options available to growers to deal with sawfly pressure. There is no established economic threshold for sawfly, however, producers are recommended to implement management strategies if 10-15% of stems were cut the previous year and overwintering conditions were favorable for the insect (Saskatchewan Agriculture; no date b).

No other observations were made on disease pressure or midge presence, so no additional results to report on for FHB resistance and midge tolerance for the 2025 growing season across the six sites.

Varietal selection is an important crop management tool, and producers should take advantage of the diverse selection of cereal varieties available dependant on their location and needs. As demonstrated plant height can help reduce the need to apply a PGR, or in the case of AAC Succeed, could benefit more from the use of a PGR compared to other wheat varieties. If wheat stem fly is likely to be an issue, then selecting AAC Grainland could be beneficial due to its solid stem characteristics. In a given growing season, varieties will not always perform the same across sites. In this demonstration, AAC Viewfield was the top performing spring wheat variety based on yield and shorter plant height at Melfort, Scott and Prince Albert. For Yorkton, AAC Viewfield was the lowest yielding variety and AAC Wheatland was the top yielding variety. In Indian Head, for durum, the PGR effects on height and lodging (and subsequent harvestability) for AAC Succeed may be enough for many farmers to justify using it, even if there had been no impact on yield. While in Swift Current AAC Schrader and AAC Grainland were the highest yielding varieties, but reduced sawfly damage possibly a result of stem solidness could make AAC Grainland the better selection.

Acknowledgments

Include actions taken to acknowledge support by SWDC.

The AgriARM sites have graciously acknowledged the SWDC support for the 2025 growing seasons through signage directly in field, verbally during Field Days, and on Field Day programs handed out to all visitors. SWDC is also acknowledged at winter speaking events. Staff are also thanked for their support in executing the demonstration.

Appendices

If necessary, include any materials supporting the previous sections, e.g. detailed data tables, maps, graphs, specifications.

Table A1. Statistical analyses and treatment means from investigating various spring wheat varieties for desired wheat varietal traits in Melfort in 2025. Means within a column followed by the same letter do not significantly differ (LSD, $P \leq 0.05$).

Melfort						
	Plant density	Flowering	Height	Grain Yield		Protein
	Plants/m ²	Days to	cm	Kg/Ha	bu/ac	%
<i>Product (PGR and FHB)</i>						
Applied	143	57.5	62 a	5213 a	77.5 a	17.29 b
Not applied	138	57.4	73 b	4718 b	70.3 b	17.99 a
<i>Variety</i>						
AAC Alida VB	140 b	57.1	74 a	4883 b	72.6 b	18.01 a
AAC Viewfield	113 c	57.6	65 c	5400 a	80.4 a	17.21 c
AAC Wheatland VB	128 bc	57.3	69 b	4936 b	73.4 b	17.50 c
CDC Adamant VB	151 ab	57.5	64 c	4750 b	70.6 b	17.91 ab
CDC Landmark VB	173 a	57.5	67 bc	4858 b	72.5 b	17.54 bc
<i>Product * Variety</i>						
AAC Alida VB with product	133	57.0	68	4958	73.5	17.60
AAC Viewfield with product	111	57.5	59	5553	82.5	16.83
AAC Wheatland VB with product	137	57.3	66	5263	78.3	17.30
CDC Adamant VB with product	157	57.5	59	5097	75.8	17.45
CDC Landmark VB with product	177	57.5	60	5193	77.5	17.25
AAC Alida VB without product	148	57.3	80	4808	71.8	18.43
AAC Viewfield without product	116	57.8	71	5246	78.3	17.60
AAC Wheatland VB without product	118	57.3	72	4610	68.5	17.70
CDC Adamant VB without product	144	57.5	70	4402	65.5	18.38
CDC Landmark VB without product	169	57.5	73	4523	67.5	17.83
Product (p-value)	0.7132	0.3910	0.0043	0.0124	0.0126	0.0122
Variety (p-value)	0.0014	0.1007	<0.0001	0.0002	0.0002	0.0018
Product * Variety (p-value)	0.6736	0.9109	0.2415	0.0921	0.0921	0.6520
Grand Mean	141	57	68	4965	73.9	17.6
CV	23.73	0.86	10.61	8.51	8.55	3.35

Table A2. Statistical analyses and treatment means from investigating various spring wheat varieties for desired wheat varietal traits in Scott in 2025. Means within a column followed by the same letter do not significantly differ (LSD, $P \leq 0.05$).

Scott						
	Plant density	Flowering	Height	Grain Yield		Protein
	Plants/m ²	Days to	cm	Kg/Ha	bu/ac	%
<i>Product (PGR and FHB)</i>						
Applied	215 b	56.8	75 b	3971	59.1	15.22
Not applied	222 a	56.7	78 a	3827	57.1	15.28
<i>Variety</i>						
AAC Alida VB	221 ab	57.4 a	81 a	3793 b	56.6 b	15.38 ab
AAC Viewfield	195 c	56.5 bc	73 d	4321 a	64.4 a	14.63 c
AAC Wheatland VB	232 a	56.8 ab	74 cd	3497 c	52.0 c	15.57 a
CDC Adamant VB	213 b	57.1 ab	75 c	3953 b	58.9 b	15.54 a
CDC Landmark VB	233 a	55.9 c	77 b	3930 b	58.5 b	15.13 b
<i>Product * Variety</i>						
AAC Alida VB with product	214	57.5	80	3744	56.0	15.53
AAC Viewfield with product	198	56.8	72	4449	66.3	14.64
AAC Wheatland VB with product	224	56.5	74	3643	54.0	15.69
CDC Adamant VB with product	211	57.0	72	3936	58.5	15.35
CDC Landmark VB with product	231	56.0	76	4083	60.8	14.90
AAC Alida VB without product	229	57.3	83	3843	57.2	15.24
AAC Viewfield without product	191	56.3	75	4192	62.6	14.63
AAC Wheatland VB without product	240	57.0	74	3351	50.0	15.45
CDC Adamant VB without product	215	57.3	78	3969	59.3	15.74
CDC Landmark VB without product	236	55.8	79	3777	56.3	15.35
Product (p-value)	0.0261	0.8893	0.0094	0.2581	0.2894	0.7024
Variety (p-value)	0.0002	0.0015	<0.0001	<0.0001	<0.0001	<0.0001
Product * Variety (p-value)	0.5855	0.5589	0.0776	0.2391	0.2964	0.0150*
Grand Mean	219	56.7	76.1	3899	58.1	15.25
CV	9.52	1.54	3.95	9.13	9.21	3.18

*post hoc test results provide a matrix where Viewfield without and with product and Landmark with product are often significantly different from all other treatments.

Table A3. Statistical analyses and treatment means from investigating various spring wheat varieties for desired wheat varietal traits in Prince Albert in 2025. Means within a column followed by the same letter do not significantly differ (LSD, $P \leq 0.05$).

Prince Albert						
	Plant density	Flowering	Height	Grain Yield		Protein
	Plants/m ²	Days to	cm	Kg/Ha	bu/ac	%
<i>Product (PGR and FHB)</i>						
Applied	215	48.1	68 b	3866	57.5	14.33
Not applied	205	48.0	74 a	4072	60.5	14.12
<i>Variety</i>						
AAC Alida VB	192 b	48.6	76 a	3777	56.2	14.35 a
AAC Viewfield	223 a	49.1	67 c	4247	63.2	14.25 a
AAC Wheatland VB	216 ab	48.9	71 b	3927	58.4	13.65 b
CDC Adamant VB	191 b	46.9	70 bc	3911	58.2	14.57 a
CDC Landmark VB	230 a	46.5	69 bc	3983	59.2	14.28 a
<i>Product * Variety</i>						
AAC Alida VB with product	196	48.8	73	3597	53.5	14.50
AAC Viewfield with product	224	49.5	66	4217	62.7	14.33
AAC Wheatland VB with product	224	49.0	68	3843	57.1	13.72
CDC Adamant VB with product	196	47.0	67	3896	57.9	14.80
CDC Landmark VB with product	239	46.0	64	3779	56.2	14.32
AAC Alida VB without product	188	48.5	80	3958	58.9	14.20
AAC Viewfield without product	222	48.8	69	4277	63.6	14.16
AAC Wheatland VB without product	208	48.8	73	4012	59.6	13.58
CDC Adamant VB without product	185	46.8	73	3927	58.4	14.34
CDC Landmark VB without product	222	47.0	74	4186	62.2	14.25
Product (p-value)	0.0891	0.9105	0.0082	0.3738	0.3747	0.3951
Variety (p-value)	0.0133	0.1315	<0.0001	0.0615	0.0604	0.0009
Product * Variety (p-value)	0.9814	0.9652	0.1671	0.6625	0.6623	0.8690
Grand Mean	210	48.0	70.5	3978	59.1	14.22
CV	13.45	5.66	7.46	10.30	10.29	4.51

Table A4. Statistical analyses and treatment means from investigating various spring wheat varieties for desired wheat varietal traits in Yorkton in 2025. Means within a column followed by the same letter do not significantly differ (LSD, $P \leq 0.05$).

Yorkton						
	Plant density	Flowering	Height	Grain Yield		Protein
	Plants/m ²	Days to	cm	Kg/Ha	bu/ac	%
<i>Product (PGR and FHB)</i>						
Applied	210	47.2	67 a	5430	80.7	15.68
Not applied	215	46.5	75 b	5348	79.5	15.71
<i>Variety</i>						
AAC Alida VB	218	47 bc	77 a	5476 ab	81.4 ab	15.66 b
AAC Viewfield	215	48 a	65 c	5085 b	75.6 b	15.88 ab
AAC Wheatland VB	217	47 c	72 b	5978 a	88.9 a	14.79 c
CDC Adamant VB	192	47 b	71 b	5191 b	77.2 b	15.97 a
CDC Landmark VB	222	45 d	71 b	5217 b	77.6 b	15.81 ab
<i>Product * Variety</i>						
AAC Alida VB with product	216	48	72	5562	80.1	15.80
AAC Viewfield with product	208	49	61	5036	76.3	15.94
AAC Wheatland VB with product	215	47	70	5836	91.0	14.86
CDC Adamant VB with product	187	48	67	5480	72.9	15.94
CDC Landmark VB with product	224	45	68	5238	77.2	15.84
AAC Alida VB without product	219	47	82	5390	82.7	15.53
AAC Viewfield without product	222	47	69	5134	74.9	15.82
AAC Wheatland VB without product	219	47	75	6119	86.8	14.72
CDC Adamant VB without product	197	47	75	4902	81.5	16.01
CDC Landmark VB without product	219	45	74	5196	77.9	15.78
Product (p-value)	0.7161	0.4316	0.0146	0.6133	0.6130	0.5819
Variety (p-value)	0.1451	<0.0001	<0.0001	0.0111	0.0111	<0.0001
Product * Variety (p-value)	0.9521	0.2015	0.7910	0.5120	0.5124	0.6859
Grand Mean	212	46.8	71.2	5389	80.1	15.62
CV	14.17	3.32	9.85	15.89	15.89	3.38

Table A5. Statistical analyses and treatment means from investigating various durum wheat varieties for desired wheat varietal traits in Indian Head in 2025. Means within a column followed by the same letter do not significantly differ (LSD, $P \leq 0.05$).

Indian Head							
	Plant density	Flowering	Height	Lodging	Grain Yield		Protein
	Plants/m ²	Days to	cm	1-9 scale	Kg/Ha	bu/ac	%
<i>Product (PGR and FHB)</i>							
Applied	281	64.9	73 b	1.97 b	5848 a	86.9 a	13.49 b
Not applied	273	64.2	84 a	3.72 a	5429 b	80.7 b	13.92 a
<i>Variety</i>							
AAC Grainland	266 b	64 b	80 b	3.06 b	5593	83.2	13.88 a
AAC Schrader	291 a	64 b	82 a	3.00 b	5777	85.9	13.61 b
AAC Succeed	292 a	63 b	79 b	2.81 b	5734	85.3	13.85 a
CDC Dynamic	265 b	64 b	80 b	4.19 a	5551	82.5	14.01 a
CDC Vantta	271 b	68 a	71 c	1.19 c	5536	82.3	13.17 c
<i>Product * Variety</i>							
AAC Grainland with product	272	64	75 e	1.75 fg	5794	86.1	13.71
AAC Schrader with product	291	64	78 d	2.25 def	6120	91.0	13.24
AAC Succeed with product	304	64	70 f	2.00 ef	5919	88.0	13.59
CDC Dynamic with product	267	64	76 e	2.88 cde	5787	86.0	13.75
CDC Vantta with product	271	68	67 g	1.00 g	5618	83.5	13.17
AAC Grainland without product	261	63	85 bc	4.38 b	5393	80.2	14.04
AAC Schrader without product	290	63	87 ab	3.75 bc	5435	80.8	13.98
AAC Succeed without product	281	63	87 a	3.63 bcd	5548	82.5	14.12
CDC Dynamic without product	262	64	85 c	5.50 a	5315	79.0	14.28
CDC Vantta without product	271	68	74 e	1.38 fg	5455	81.1	13.17
Product (p-value)	0.0969	0.0979	0.0003	0.0192	0.0288	0.0286	0.0354
Variety (p-value)	0.0077	<0.0001	<0.0001	<0.0001	0.1064	0.1042	<0.0001
Product * Variety (p-value)	0.6847	0.5319	<0.0001	0.0113	0.2145	0.2142	0.0022*
Grand Mean	277	64.6	78.4	2.85	5638.3	83.8	13.70
CV	7.91	2.86	9.14	55.37	7.72	7.72	4.32

*post hoc test results provide a matrix

Table A6. Statistical analyses and treatment means from investigating various durum wheat varieties for desired wheat varietal traits in Swift Current in 2025. Means within a column followed by the same letter do not significantly differ (LSD, $P \leq 0.05$).

Swift Current							
	Plant density	Flowering	Height	Grain Yield		Protein	Sawfly Damage
	Plants/m ²	Days to	cm	Kg/Ha	bu/ac	%	%/plot
<i>Product (PGR and FHB)</i>							
Applied	119	71	58.4	2527	37.6	16.93	2.0b
Not applied	119	71	60.4	2045	30.4	17.48	3.7a
<i>Variety</i>							
AAC Grainland	112	71	61ab	2421 ab	36 ab	17.40 b	0.50 b
AAC Schrader	121	71	63a	2724 a	40 a	16.62 d	4.13 a
AAC Succeed	121	71	60b	1991 c	30 c	17.15 bc	3.63 a
CDC Dynamic	124	70	59b	2097 c	31 c	17.98 a	4.75 a
CDC Vantta	119	71	54c	2198 bc	33 bc	16.90 cd	1.13 b
<i>Product * Variety</i>							
AAC Grainland with product	111	71	60	2449	36	17.34	0.5 c
AAC Schrader with product	121	71	63	3072	46	16.28	3.5 b
AAC Succeed with product	120	70	58	2123	32	17.09	1.5 c
CDC Dynamic with product	124	70	58	2378	35	17.59	3.5 b
CDC Vantta with product	118	71	54	2615	39	16.38	1 c
AAC Grainland without product	112	71	62	2392	36	17.46	0.50 c
AAC Schrader without product	120	71	64	2375	35	16.96	4.75 ab
AAC Succeed without product	121	71	62	1858	28	17.21	5.75 a
CDC Dynamic without product	123	71	60	1816	27	18.38	6.00 a
CDC Vantta without product	120	71	54	1782	26	17.41	1.25 c
Product (p-value)	0.9698	0.3534	0.3529	0.1040	0.1040	0.1277	0.0117
Variety (p-value)	0.3620	0.1529	<0.0001	0.0005	0.0005	<0.0001	<0.0001
Product * Variety (p-value)	0.9975	0.8900	0.5471	0.0976	0.974	0.0843	0.0128
Grand Mean	119	71	59.4	2286.1	33.98	17.21	2.83
CV	10.62	0.99	9.61	29.33	29.33	4.85	82.49

Table A7. Additional Site-Specific Agronomic Information

Factor / Field Operation	Indian Head	Melfort	Prince Albert	Scott	Swift Current	Yorkton
Pre-emergent herbicide	Roundup Weathermax @ 0.67 l/ac (May 13)	Avadex @1.2 L/ac (May 15) StartUp @ 670 ml/ac (May 15)	Glyphosate @ 0.88 L/ac + Heat @ 29 ml/ac (May 10)	Glyphosate 540 @ 1L/ac + AIM @ 35 ml/ac (May 9)	RT540 @ 0.5 L/ac (April 18)	Roundup Transorb @ 1 l/ac (May 22)
Seeding Date	May 10	May 16	May 22	May 13	April 29	May 23
Seeding Rate	375 seeds/m2	300 seeds/m2	300 seeds/m2	300 seeds/m2	225 plants/m2	
Row spacing	30cm	12 inch	10 inch	10 inch	8.25 inch	
N:P:K:S applied	150-40-20-20 kg/ha	189-56-11-6 kg/ha	111-48-0-0 kg/ha	83-13-03 @ 150 lbs/ac	30-15-0-6 @ 333lbs/ac	
In-crop herbicide	OctainXL @ 0.45 l/ac + Simplicity GoDRI @ 28 g/ac (June 11)	Momentum @ 0.45 L/ac + MCPA @ 0.38 L/ac (June 20) Puma Advance @ 413 ml/ac (June 20)	none	Axial Xtreme@ 0.5 L/ac + Buctril M @ 0.4 L/ac (June 16)	Liquid Achieve @ 0.2 L/ac + Buctril M @ 0.4 L/ac + Carrier @ 0.5 L/100L (June 4)	Prestige XL @ 0.9 l/ac (June 12) Axial @ 0.5 l/ac (June 16) Axial + AMS (June 27)
Fungicide	July 13 (GS 59-65)	July 11	July 14	July 10	July 4	July 8 Applied to all trts
PGR	June 24(GS 32)	July 1	June 16	June 20	June 12	July 2 (boot)
Pre-harvest herbicide or desiccant	Roundup Transorb HC @ 0.67 l/ac (August 27)	StartUp @ 0.67 L/ac on (Sept 8)	none	Glyphosate 540 @ 1L/ac, Heat LQ @ 59mL/ac + Merge @ 200mL/ac (sept 8)	none	None
Harvest date	September 3	Sept 22	Sept 29	Sept 20	Aug 20 and Sept 10	
Additional information	May 17 (-2.3°C) May 18 (-2.2°C) May 23 (-0.2°C)	Sept 6 (-3°C)	May 23 (-2.6°C) June 5 (-2.3°C) June 9 (-1.9°C) June 11 (-0.1°C)		-high aphid pressure Aug 8 -Trt 3 harvested 21 days late -sawfly feeding and damage evident	

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Abstract

In 350 words or less, combine the key elements from the project objectives, methodology, results and conclusions to provide a short concise summary of the project. List extension activities such as field days or workshops and include the number of people who visited the project.

A demonstration was conducted across 6 AgriARM sites (Melfort, Prince Albert, Scott, Yorkton, Indian Head and Swift Current) in Saskatchewan in 2025 to showcase the regional impact of breeding successes and flowering timing on crop yield in spring wheat and durum. Five varieties were selected per wheat class based on certain traits of interest such as FHB resistance, protein, height, midge tolerance, and stem solidness. The trial was set up as a split plot design and application of PGR and FHB fungicide was also evaluated. Cooler drier spring temperatures and patchy emergence created some challenging growing conditions for some sites. Yields ranged between 2286 kg/ha (34 bu/ac) in Swift Current up to 5638 (84 bu/ac) in Indian Head. While difficult to discern if differences in flowering timing had an effect on yield, CDC Landmark flowered 1.5-3 days earlier in Scott and Yorkton, while CDC Vantta, a durum wheat, flowered 4-5 days later in Indian Head. It is possible for large temperature fluctuations to occur within a few days. Plant height, protein and stem solidness were varietal breeding successes showcased in this demonstration. AAC Viewfield was the top performing spring wheat variety based on yield and shorter plant height at Melfort, Scott and Prince Albert. Alternatively, AAC Viewfield was the lowest yielding variety in Yorkton and AAC Wheatland was the top yielding variety. In Indian Head, for durum, the PGR effects on height and lodging (and subsequent harvestability) for AAC Succeed may be enough for many farmers to justify using it, even with no impact on yield. While in Swift Current, AAC Grainland was a top yielding variety with reduced sawfly damage. Producers are encouraged not to forget about varietal characteristics when selecting which wheat to grow on farm. These characteristics are an important tool that can reduce the need for in crop product applications and provide extra insurance. This demonstration was featured at summer field days and tours in Melfort (126 attendees), Scott (185 attendees), Indian Head (192 attendees) and Swift Current (18 attendees).