

Wheat Variety Trial



Funded by Saddle Hills County
 Trial Site: Fourth Creek, Alberta
 Project Lead: Dr. ??
 Data from 2023

Objective






To offer impartial information to producers in Saddle Hills County regarding the agronomic performance of various wheat varieties under local environmental and soil conditions, aiding them in selecting the most suitable varieties for their county.

Methods

The project was carried out in 2023 at Conrad Dolen's farm located at the junction of Hwy 725/TR 814 in Fourth Creek, AB. Site soil information from the surface soil (0-6" soil depth) before seeding: pH=6.3, organic matter = 6.7, electrical conductivity = 0.38 dS/m, while the nutrient analysis of the soil gave N = 11 ppm, P = 17 ppm, K = 283 ppm and S = 5 ppm. Soil base saturation was 87.0% (Ca 58.5%, Mg 20.7%, Na 3.7%, K 1.1%).

The previous crops on the site were field peas (2022) and barley (2021). The trial was a randomized complete block design with four replications on small plots measuring 8 m x 1.14 m. Eleven (11) wheat varieties were tested (see Table 1). Seeding was carried out using a 6-row Fabro plot drill equipped with disc-type openers on 23 cm row spacing complete with mid-row banding.

Table 1. Wheat varieties, field operations and data collection

	Seeding Date	May 19, 2023 on a pea stubble
	Harvest Date	September 20, 2023
	Seeding Depth	3/4"
	Seeding Rate (plant population)	30 plants/ft ² (324 plants/m ²)
	Soil Temp and Moisture	19.0°C and 13.2% vwc
	Varieties	Wheat varieties (11) Canada Western Red Spring Wheat (CWRS) AAC Viewfield (Check), AAC Redberry, Tracker, CDC Go, AAC Hodge, AAC Hockley, AAC Wheatland, AAC Redstar, Parada, Canada Prairie Spring Red Wheat (CPSR) AAC Penhold, Accelerate
	Field Operations	Prepass herbicide: Smoke 540 Glyphosate @ 0.67L/ac + FBN Florasulam @ 40 ml/ac on 05/14/23 Fertility: Nutrient (actual) recommendations for an average yield 51 bu/ac of wheat: N=98 lbs/ca; P=28 lbs/ac; K=0 lbs/ac, S=0 lbs/ac In-crop herbicide: Esteem @ (0.24L/ac Flu + 0.28L/ac MCPA + 0.084L/ac Copy) on 06/18/23 esiccant: Heat LQ (43ml/ac) + Glyphosate (1L/ac) + Merge (400 ml/ac) on 09/09/23 arvest method: small-plot combine
	Data Collection	soils: Soil moisture and soil temperature lant: Plant height and lodging rain: Yield, quality and grain attributes (bushel weight and seed weight [thousand kernel weight, (TKW)])

Observations

Aside from the widespread grasshopper pressure experienced in the Peace Country in 2023, no other pest related issues such as fungal, bacterial, or viral diseases were noted in the plots.

Results

The results for the wheat variety trial are shown on Table 2 below.

Plant Height and Lodging

Plant height ranged from about 53 to 72 cm with the following varieties AAC Redberry, AAC Hodge and Parada growing as tall > 70 cm in height. AAC viewfield (58 cm) and AAC Penhold (53 cm) were the shortest varieties. No lodging was recorded among the varieties.

Results Continued...

Wheat Yield

Wheat yielded about 40 bu/ac on average with a range of 30 - 51 bu/ac. AAC Wheatland followed by AAC Hodge were the high-yielding varieties with 51 and 47 bu/ac respectively. Tracker, an awnless variety yielded only 30 bu/ac.

Wheat Bushel and TKW

The bushel weight varied between 44 and 66 lbs/bu, with Tracker notably having a significantly lower bushel weight. TKW ranged from 26 - 38 g/1000 seeds with Tracker again coming in with a rather low TKW of 26 g/1000 seeds.

Wheat Quality

Wheat protein values narrowly ranged between 15 and 16 % with no significant differences between tested varieties (data not shown).

Conclusion

Average yields for wheat were generally low, reaching approximately two-thirds of the 5-year average yields for Risk Area 18, which includes Fourth Creek (AFSC 2023). This year, AAC Wheatland and AAC Hodge emerged as the top performers, each achieving over a 20% grain yield advantage compared to the AAC Viewfield check variety. Tracker the awnless wheat variety had the lowest yields. These yield advantages will be monitored in 2024 and 2025.

Table 2: Yield and grain yield attributes of wheat varieties

	Grain Yield (bu/acre)	Grain Yield (% of check)	Height (cm)	Bushel Weight (lbs/bu)	TKW g/1000 seeds
AAC Viewfield	37.9	100	58	65	33
AAC Redberry	40.7	107	72	65	35
Tracker	30.0	79	60	44	26
CDC Go	32.4	86	65	64	38
AAC Hodge	46.9	124	70	66	35
AAC Hockley	40.4	107	63	66	35
AAC Wheatland	50.9	134	68	64	36
Accelerate	37.4	99	60	65	34
AAC Penhold	38.3	101	53	64	37
AAC Redstar	33.9	90	62	64	32
Parada	38.8	102	70	66	34
MEAN	38.9	103	64	63	34
p value	0.27	-	0.01	0.70	0.001
LSD	22.5	-	14.5	19	4.7
CV (%)	15	-	12.8	15	10.4

* Check variety; LSD - least significant difference; CV - coefficient of variation; ns - not significant; * p < 0.05; ** p ≤ 0.01; *** p ≤ 0.001

References

AFSC (2023). Yield Alberta 2023. Agriculture Financial Services Corporation.

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