

W006 – Wheat row spacing

Introduction

Partnering with Antler Valley Farms (Innisfail, AB), this trial compared two row spacings on the CPSR variety AAC Penhold. The trial was seeded using a 60-foot SeedMaster ultraSR drill with 38 cm (15") and 19 cm (7.5") row spacings. The 19 cm (7.5") row spacings were implemented by making two passes and seeding between the first pass rows using RTK. To adjust for two passes, seed and fertilizer rates were applied at half rates for each pass. To account for the compaction caused by the extra pass required on the 19 cm (7.5") treatment, a non-working pass was made on each 38 cm (15") row treatment to increase compaction uniformity between treatments. Treatments were replicated and randomized.

Protocol #: W006

Closest Town: Innisfail, Alberta

Soil type: Medium textured Eluviated Black Chernozem

Seeding Date: May 3, 2021

Harvest Date: August 30, 2021

Row Spacing(cm): 38cm (15") and 19cm (7.5")

Variety(s): AAC Penhold

Reps: 4

Previous Crop: Barley

Tillage: Harrowed fall 2020

Herbicides:

Pre: Prepass + Glyphosate

In-Crop: Axial & Cirpreme

Seed Treatment: Raxil Pro

Foliar Insecticides: None

Foliar Fungicides: TILMOR

Fertilizer:

46 – 0 – 0 @198lbs/ac

11 – 52 – 0 @129lbs/ac

Total fertilizer applied: 105.2 lbs actual N/ac; 67.1 lbs P₂O₅/ac

Irrigation: None

Rainfall: Between May 1 and August 1: 152.4mm (6")

Treatments

Treatment 1: 19 cm (7.5") rows

Treatment 2: 38 cm (15") rows

Goal:

To determine the yield and grain quality impacts of 38 cm (15") and 19 cm (7.5") row spacing on spring wheat.

Plant stand count results:

At 21 days after seeding, the crop was assessed for emergence rates and plant stands were counted. At the 7.5" row spacing, plant stand was (non-significantly) lower than the 38 cm (15") row spacing treatment (Table 1).

Yield results:

Significant yield differences were seen between treatments. The 38 cm (15") row spacing treatment resulted in a yield of 87.6 bu/ac, a 3.5% decrease compared to the 19 cm (7.5") row spacing treatment (90.8 bu/ac) (Table 1).

Grain quality results:

No significant differences in grain protein, test weight, or fusarium infection were seen (Table 1).



Figure 1: Visual plant stand differences between the 38 cm (15") (left) row spacing and 19 cm (7.5") (right) row spacing. Image taken 33 days after seeding on June 8th.



Figure 2: Visual plant stand difference between the 38 cm (15") (left) row spacing and 19 cm (7.5") (right) row spacing. Image taken July 6 at early anthesis (BBCH 60).

Table 1: Plant stand count, yield, and quality results comparing the 19 cm (7.5") and 38 cm (15") row spacing on AAC Penhold CPSR wheat in Innisfail, Alberta, 2021.

Row Spacing (in)	Plant stand count at 21 days after seeding (plants/ft ²)	Yield at 14.5% seed moisture content (bu/ac)	Protein %	Test Weight (kg/hL)	Fusarium (%)
7.5" rows	33.3 a	90.8 a	11.0 a	73.8 a	0.10 a
15" rows	38.2 a	87.6 b	10.7 a	73.9 a	0.11 a
p-value	0.1685	0.0108	0.1597	0.882	0.495
CV%	12.17%	2.88%	4.01%	0.80%	15.43%

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

Summary

The wider row spacing of 38 cm (15") with CPSR AAC Penhold wheat resulted in a 3.5% decrease (3.2 bu/ac) yield as compared with the 19 cm (7.5") row spacing. Row spacing had no effect of final grain quality.