W005 – Wheat seeding rates

Introduction

Partnering with Triple H Farms in Carstairs, Alberta, this trial compared three different seeding rates on the CPSR wheat variety, SY Rorke. The trial was seeded using a 56 ft drill with 3" paired openers at 12" row spacings. Seeding rates to target plant stand treatments were determined using thousand kernel weight, germination percentage and estimated emergence mortality. Seeding rates to attain the treatment target plant stands of 25 (treatment 1), 30 (treatment 2) and 35 plants/ft^2 (treatment 3) were 88.9, 106.7, and 124.4 pounds of seed per acre, respectively. Treatments were replicated and randomized.

Protocol #: W005
Closest Town: Carstairs, Alberta
Soil type: Medium textured Orthic Black Chernozem
Seeding Date: May 4, 2021
Harvest Date: Sept 6, 2021
Row Spacing(cm): 30cm (12")
Variety(s): SY Rorke
Reps: 4
Previous Crop: Canola
Tillage: Disked in the spring

Herbicides:
Pre: None
In-Crop: Pardner herbicide followed application of Infinity herbicide + Axial Extreme
Seed Treatment: Vibrance Quattro
Foliar Insecticides: None
Foliar Fungicides: TilMOR
Fertilizer:
46-0-0 @ 179lbs/ac
6-30-10-0 @ 90lbs/ac with the seed
Total fertilizer applied: 87.5 lbs actual N/ac; 27 lbs P_2O_5/ac; 9 lbs actual K_2O/ac
Irrigation: None
Rainfall: Between May 1 and August 1: 185.4mm (7.3")

Treatments

Treatment 1: Target 25 plants/ft^2

Treatment 2: Target 30 plants/ft^2

Treatment 3: Target 35 plants/ft^2

Goal:

To determine the yield and grain quality impacts of seeding rates on CPSR wheat production.

In-crop assessment results:

Although seeding rates were adjusted to target specific plant stands, treatment 2 and 3 displayed no difference in plant stands at 21 days after seeding. However, treatment 1 was significantly lower than both treatments 2 and 3 (Table 1).

Yield results:

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

Grain quality results:

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

Table 1: Plant stand counts, yield, and quality results comparing three target plant stands (25 plants/ft^2, 30 plants/ft^2, and 35 plants/ft^2) on CPSR wheat variety SY Rorke in Cartstairs, Alberta, 2021.

Target Plant Stand	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 %
Target 22 plants/ft^2	23.3 a	67.15 a	12.63 a	83.0 a	0.13 a
Target 27.5 plants/ft^2	29.2 b	64.25 a	12.80 a	82.7 a	0.13 a
Target 33 plants/ft^2	32.5 b	67.05 a	12.35 a	83.1 a	0.13 a
p-value	*0.0005*	*0.3692*	*0.1083*	*0.1964*	*0.729*
CV%	14.91%	4.65%	2.90%	0.38%	7.12%

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

Results Summary

Significant differences in plant stand were seen with the lowest seeding rate, treatment 1, having a significantly lower plant stand that the two higher seeding rates. Overall, no significant differences were seen in yield or quality.