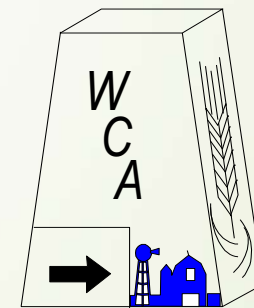


Winter Wheat Agronomy Considerations: Seeding Dates and Nitrogen Rates

Amber Wall, Wheatland Conservation Area

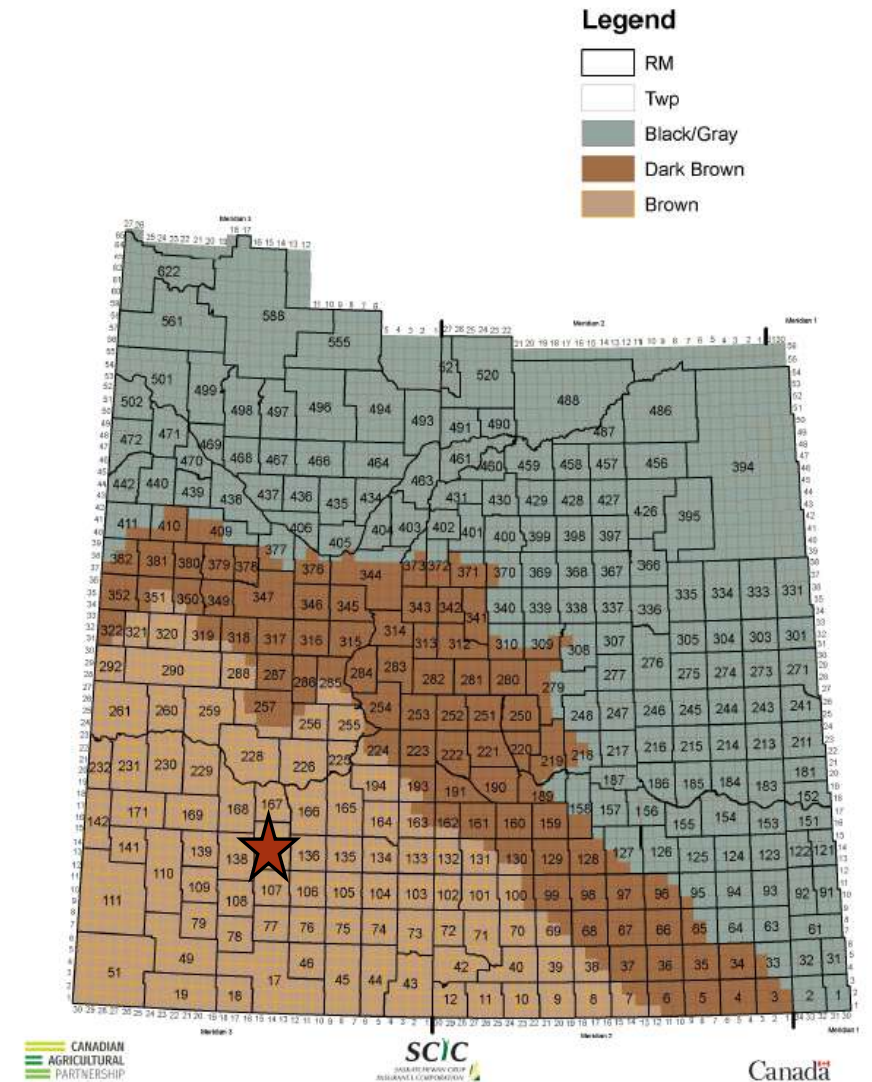
AgriARM Research Update

January 16, 2020



Wheatland Background

- Non-profit / producer run since 1982.
- We operate under the Agri-ARM umbrella of Applied Research sites (8 sites)
- Trials from the Dry Brown Soil Zone of Southwest Saskatchewan
- Presenting results from Swift Current 2019



General Conditions

Accumulative Weekly Precipitation for Years 2010-2019

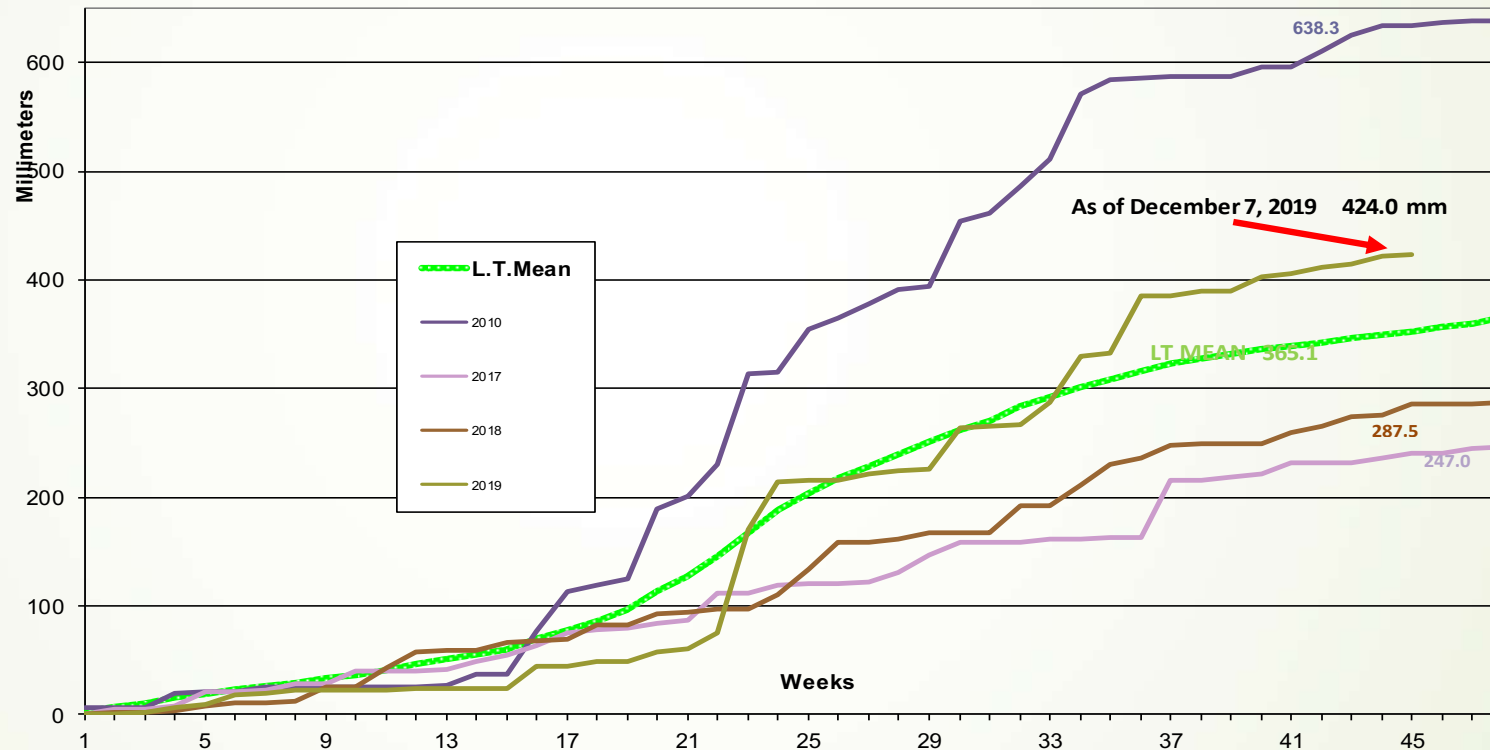
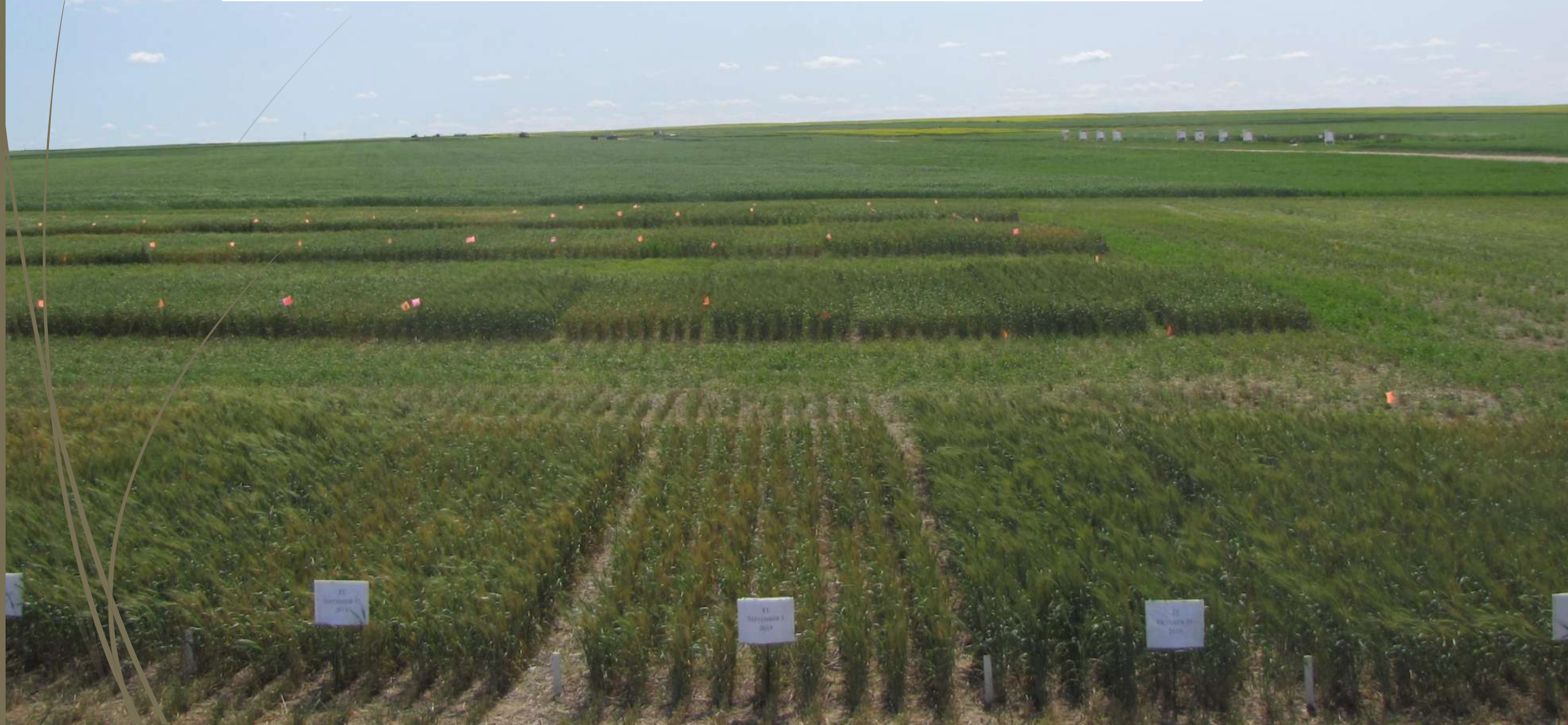


Figure 1. Accumulative weekly precipitation for years 2010 (record high), and 2017-2019 (AAFC Swift Current).

Seed Date Demonstration in Winter Wheat





Previous Research

- Research in Canada and the United States has shown that winter wheat depending upon the region (MB, SK, AB), can be planted in late September to mid-October and still maintain significant viability.
- Yvonne Lawley at the University of Manitoba notes that establishment, winter survival and yield were dependent on winter and early spring weather conditions.



Objective

- ▶ The objective of this project is to demonstrate to Saskatchewan producers' that the accepted final seeding date for winter wheat (previously September 15th, now September 30th deadline for Saskatchewan Crop Insurance Coverage) can be extended into October and the still maintain a significant level of viability.



Treatments

2018-2019 (Year 1)		
Treatment #	Target Seeding date	Actual Seed Date
1	Sept 1, 2018	Aug 30, 2018
2	Sept 15, 2018	Sept 13, 2018
3	Oct 1, 2018	Sept 28, 2018
4	Oct 15, 2018	Oct 11, 2018
5	Oct 31, 2018	Oct 26, 2018

Operations

Year 1

2018

August 28, 2018 Soil Sampled (0-6", 6-12)

Sidebanded Fertility 200lb/ac (30-15-0-6)
Applied 60-30-0-12

Variety AAC Wildfire @ 120lbs/ac

TKW = 35g

Treated with CVQ
Seeded at 9" row spacing

August 30, 2018

September 13, 2018

September 28, 2018 Seed Dates @ 1" Depth

October 11, 2018

October 26, 2018

2019

May 28, 2019 Infintiy @ .33L/ac

August 26, 2019 Harvested 7 rows with Zurn Combine

Year 2

2019

September 12, 2019 Soil Sampled (0-6", 6-12)

Sidebanded Fertility 200lb/ac (30-15-0-6)
Applied 60-30-0-12

Variety AAC Wildfire @ 120lbs/ac

TKW = 35g

Treated with CVQ
Seeded at 8.25" row spacing

September 18, 2019

October 7, 2019

October 15, 2019 Seed Dates @ 1" Depth

October 21, 2019

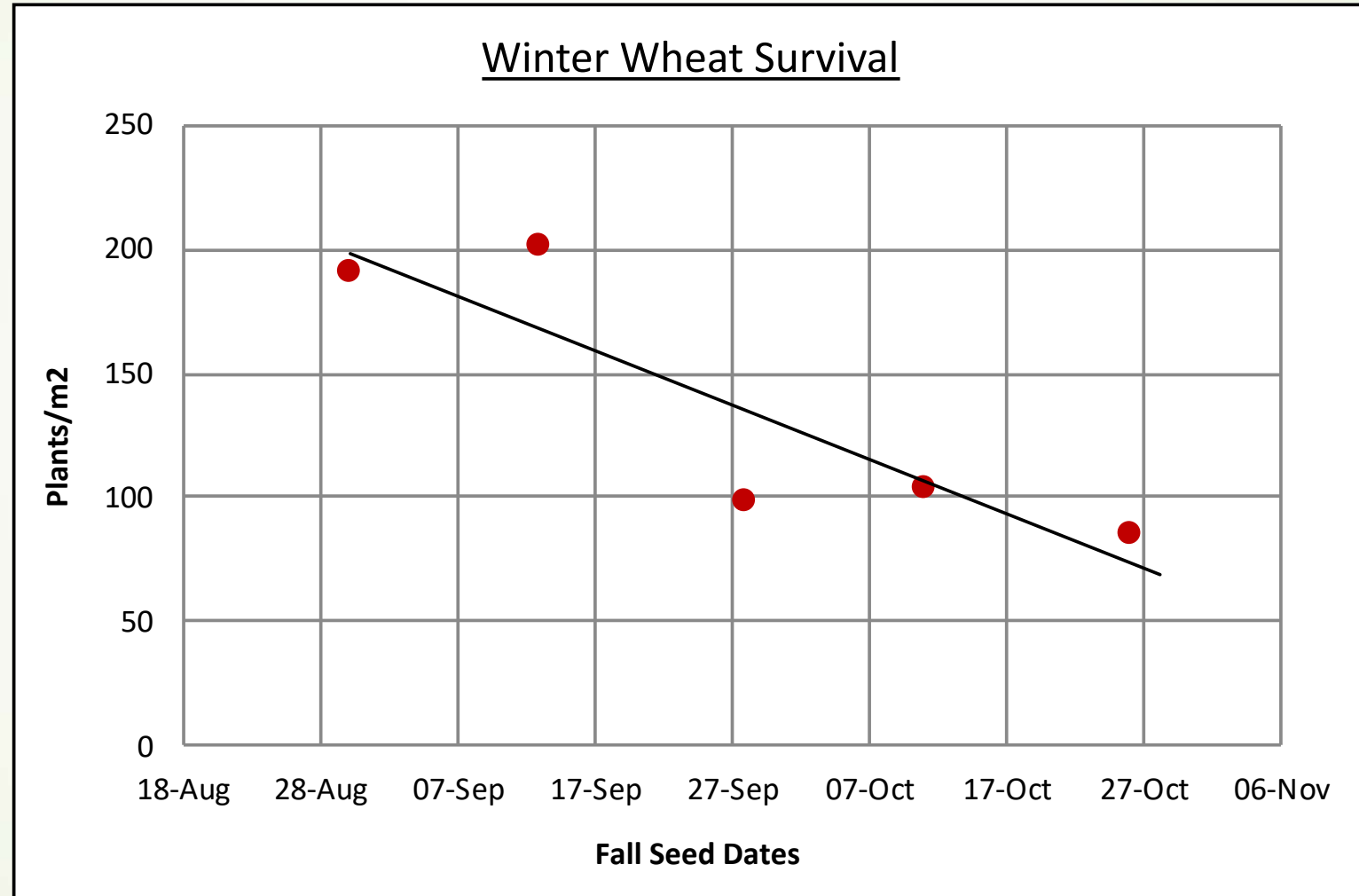
October 30, 2019

A photograph of a winter wheat field. The wheat is green and appears to be in the early stages of growth. In the foreground, a white sign is partially visible, which is the subject of the OCR. The sign is slightly tilted and has some wear. The background shows a vast field of similar wheat stretching towards the horizon under a clear sky.

Year 1 Results, Swift Current

WINTER WHEAT
SEEDING DATE
DEMONSTRATION

Winter Wheat Emergence



(CV=11.8%, LSD=8.9 plants/m²)

Reduced spring plant stand on treatment 3, seeded September 28, 2018. (photo taken May 23, 2019).



The first and last seeded winter wheat plots in different stages of development. Photos taken on **May 23, 2019**.



Seeded September 1, 2018



Seeded October 26, 2018

The first and last seeded winter wheat plots in different stages of development .Photos taken on **June 24, 2019**.



Seeded September 1, 2018



Seeded October 26, 2018

The first and last seeded winter wheat plots in different stages of development .Photos taken on **July 19, 2019**.



Seeded September 1, 2018



Seeded October 26, 2018

The first and last seeded winter wheat plots in different stages of development .Photos taken on **August 7, 2019**.



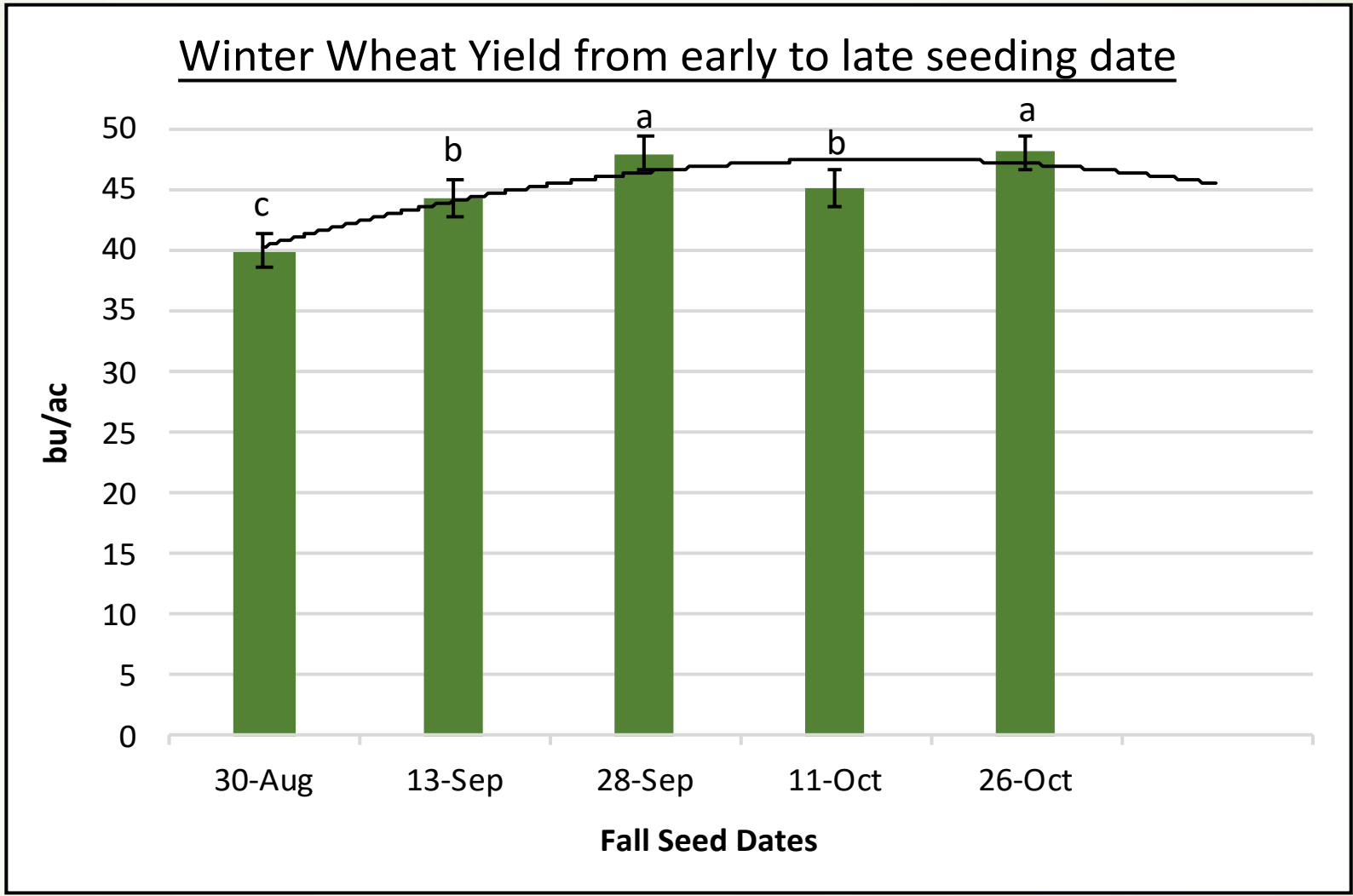
Seeded September 1, 2018



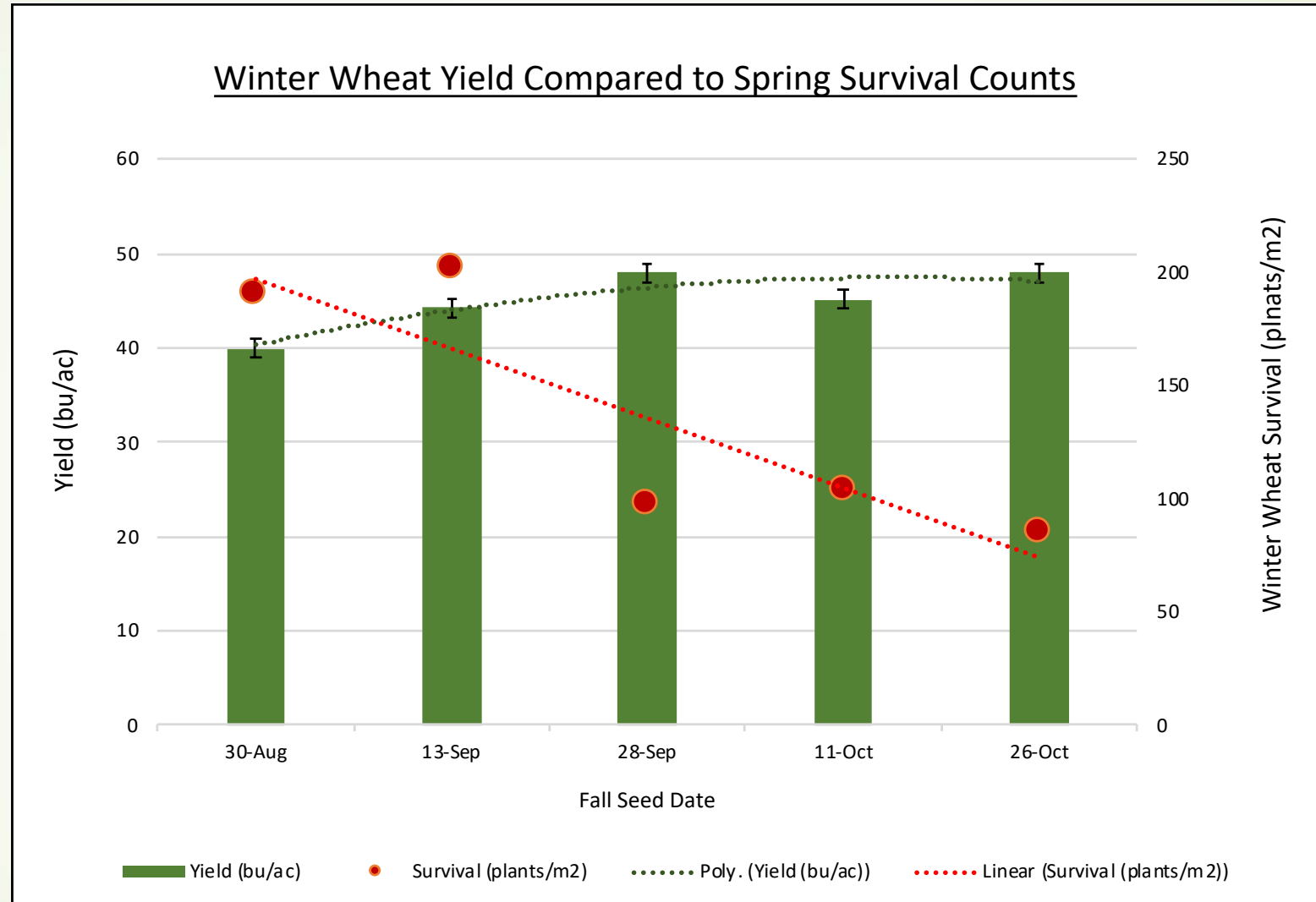
Seeded October 26, 2018

A field of tall, dense grasses, likely a cereal crop, with a mix of green and yellowish-brown hues. A white sign is placed in the foreground, partially obscuring the grass. The sign has the text "T1", "SEPTEMBER 1", and "2018" printed on it. The grasses are arranged in rows, and a dirt path is visible between them.

T1
SEPTEMBER 1
2018

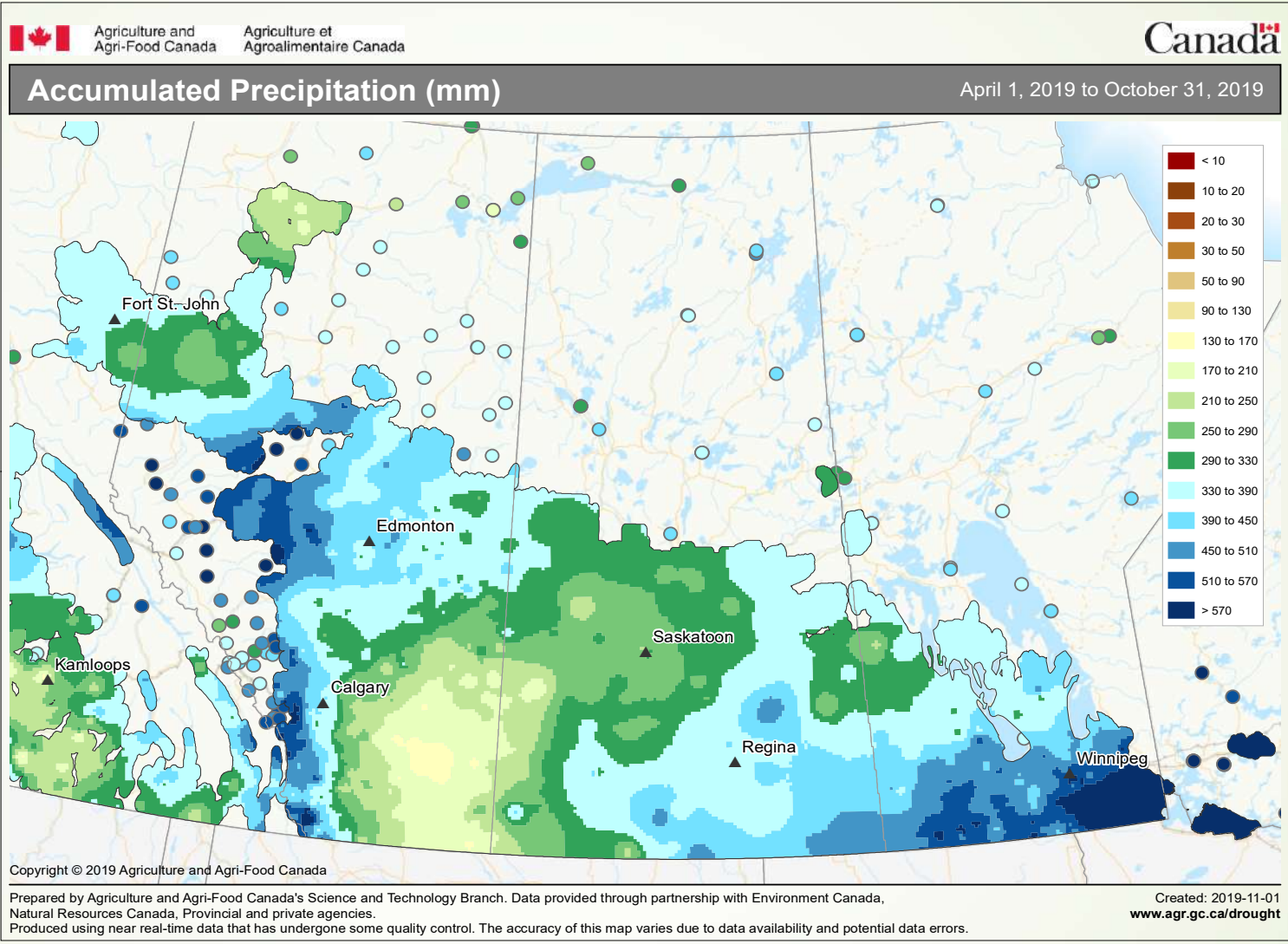


Winter wheat yield for each of the 5 seed dates. (CV=5.1%, LSD=1.3 bu/ac)



Winter wheat yield compared to plant density counts in Spring for each of the 5 seed dates. (CV=5.1%, LSD=1.3 bu/ac)

SEED DATE	Days to Maturity %		Leaf Disease 1-10		Yield Kg/ha	Yield Bu/ac	
AUG 30, 2018	355.8	a	5.88	b	2683.32	39.9	c
SEPT 13, 2018	341.3	b	6.25	a	2979.22	44.3	b
SEPT 28, 2018	325.5	c	5.25	c	3221.33	47.9	a
OCT 11, 2018	311.0	d	5.75	b	3033.02	45.1	b
OCT 26, 2018	295.0	e	4.13	d	3228.05	48.0	a
P-VALUE	<0.05		<0.05			<0.05	
LSD	0.73		.31			1.3	
CV%	0.4		10.2			5.1	



Accumulative precipitation from April 1, 2019 to October 31, 2019.





Funding for this project
provided by:

ADOPT

Agricultural Demonstration of
Practices and Technologies

Government of Canada | Agriculture and Agri-Food Canada | Greening Program

Response to Contrasting Placement and Timing Options for N Fertilizer



 **FERTILIZER CANADA**





Treatments

#	Total N Rate (soil + fert)	Timing / Placement
1	0x (no added N fertilizer)	N/A
2	60 kg soil + fert N/ha	Fall Side-Band
3	90 kg soil + fert N/ha	Fall Side-Band
4	120 kg soil + fert N/ha	Fall Side-Band
5	150 kg soil + fert N/ha	Fall Side-Band
6	180 kg soil + fert N/ha	Fall Side-Band
7	60 kg soil + fert N/ha	Spring Broadcast
8	90 kg soil + fert N/ha	Spring Broadcast
9	120 kg soil + fert N/ha	Spring Broadcast
10	150 kg soil + fert N/ha	Spring Broadcast
11	180 kg soil + fert N/ha	Spring Broadcast
12	60 kg soil + fert N/ha	Split Application (50/50)
13	90 kg soil + fert N/ha	Split Application (50/50)
14	120 kg soil + fert N/ha	Split Application (50/50)
15	150 kg soil + fert N/ha	Split Application (50/50)
16	180 kg soil + fert N/ha	Split Application (50/50)



Operations

Operations

29-Aug-18 Soil Sample (0-6, 6-12) = 15N in Soil + 6N applied with 11-52-0

4-Sep-18 Seeded AAC Wildfire WW @120#/ac treated with CVQ at label rates

TKW: 35g

94% germ

9" row spacing

Fertility: 30#P (57.7lbs/ac) 11-52-0 sidebanded at time of seeding

4-Sep-18 100% fall sideband and 50% fall sideband applied at seeding as per protocol

27-Sep-18 Fall Emergence Counts

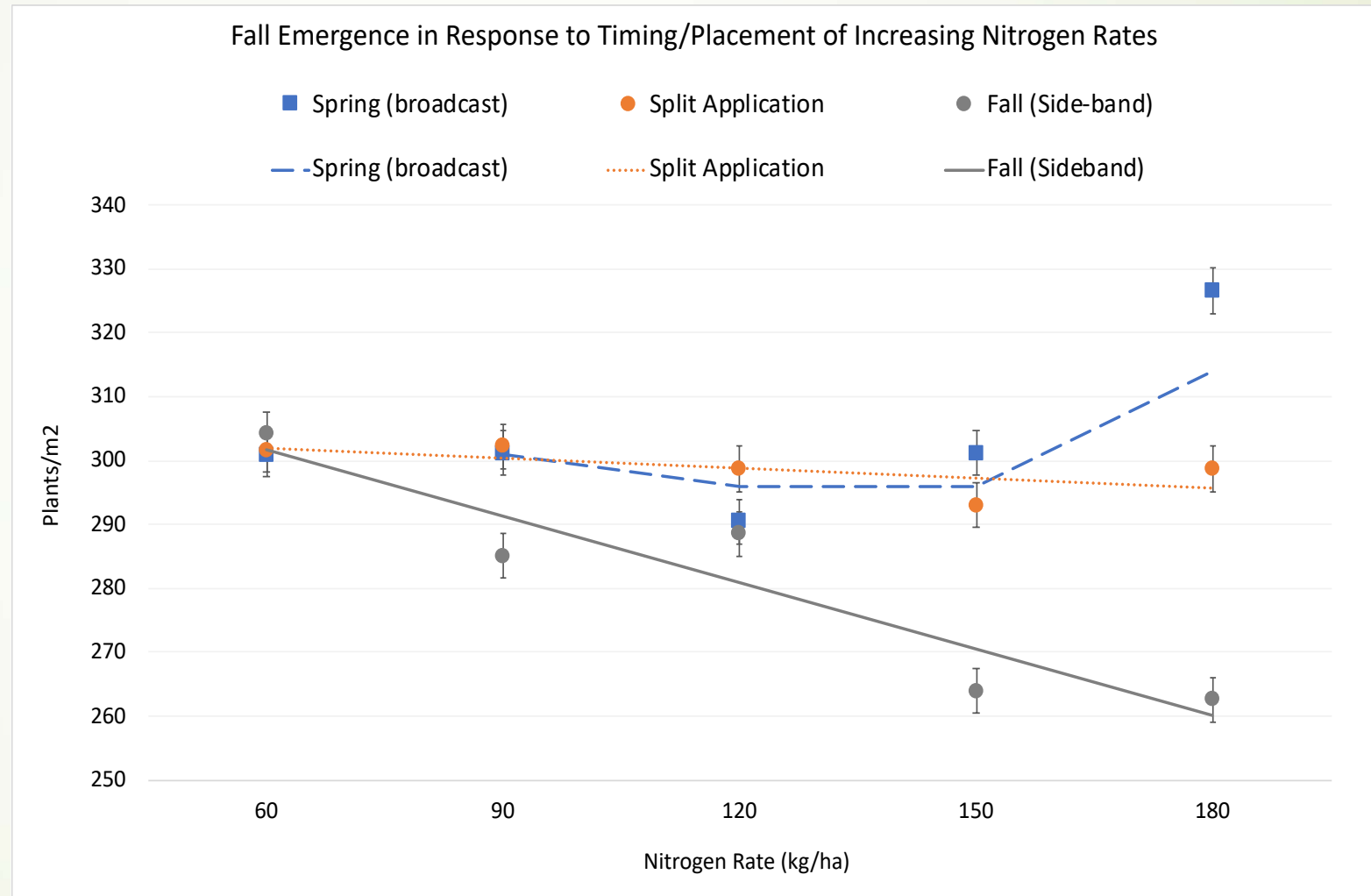
14-May-19 100% Spring Broadcast and 50% Spring Broadcast as per protocol

28-May-19 Achieve @ .2L/ac + Infinity @.33L/ac + Turbo Charge @.2L/ac

18-Jun-19 Spad Meter

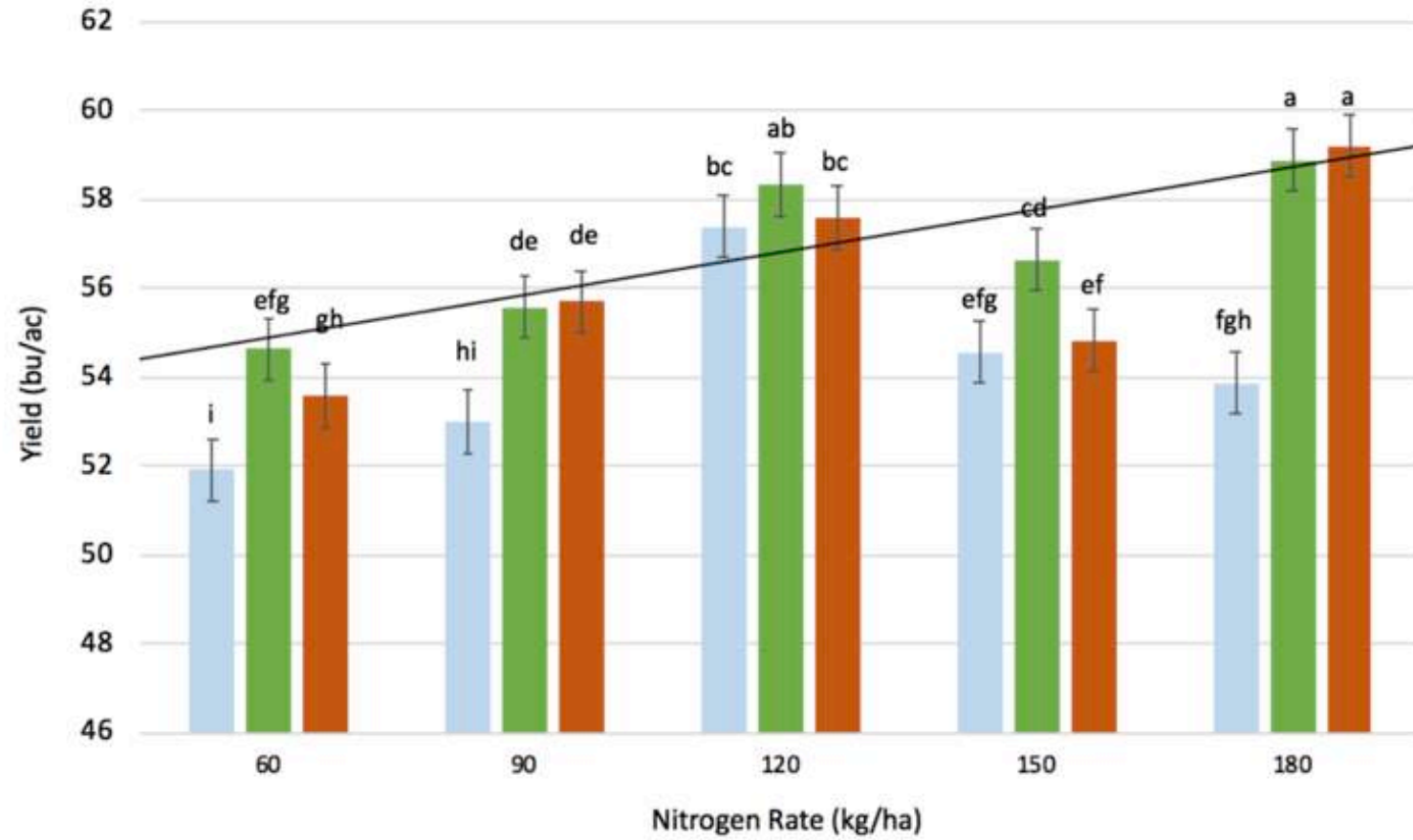
27-Aug-19 Harvested 7 rows with Zurn

Plants Counts: Sept. 27, 2018



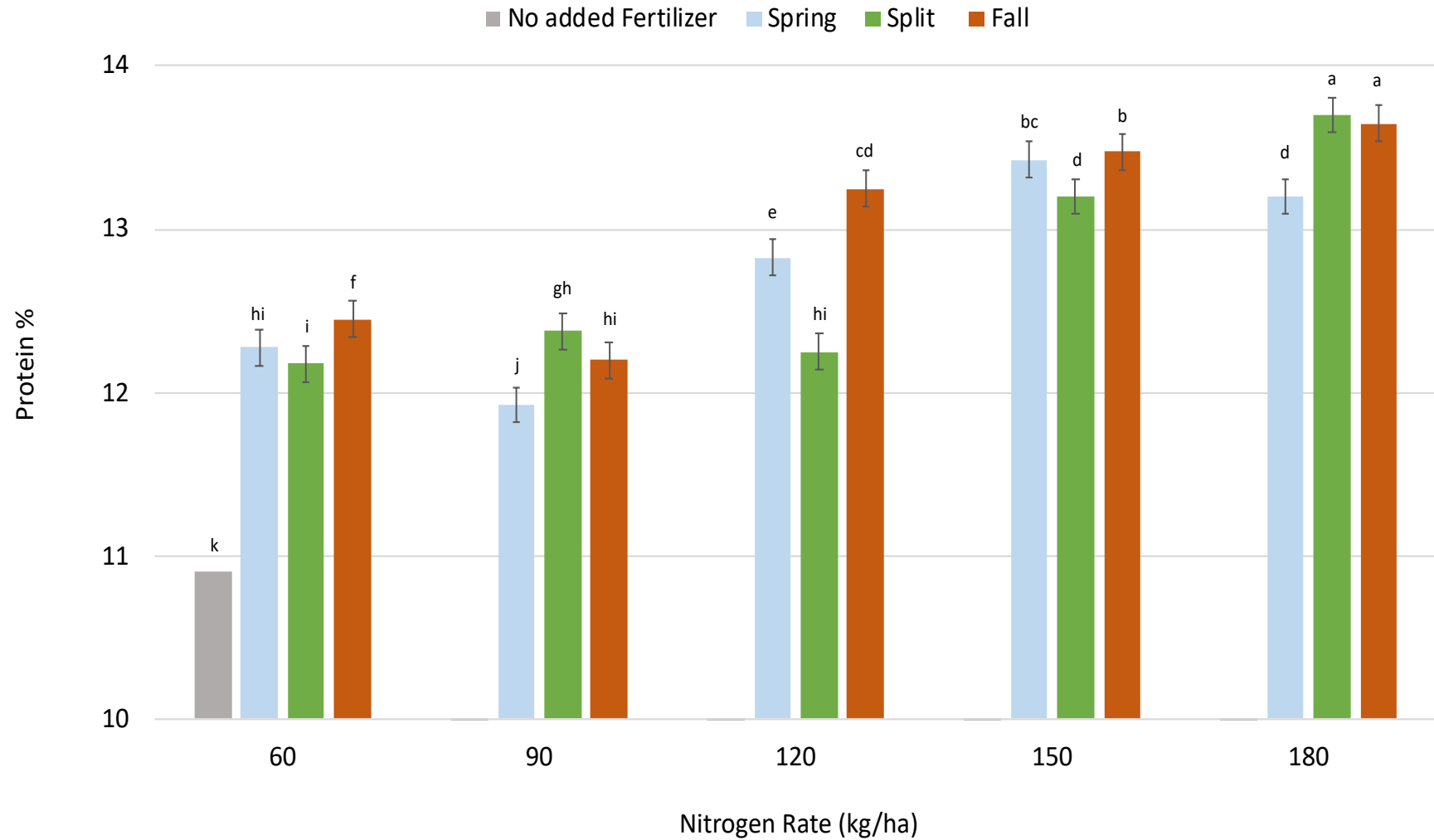
(LSD = 7.04, CV = 8.01%)

Yield Response to Timing/Placement of Increasing Nitrogen Rate

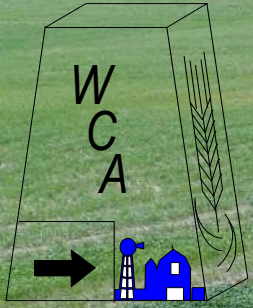


(LSD = 1.24, CV = 7.56%)

Protein Level in Response to Timing/Placement of Increasing Nitrogen Rates



(LSD = 0.19, CV = 4.91%)



Thank you!

2020 Croppportunities Conference March 11th
2020 Wheatland Annual Tour July 16th
www.wheatlandconservation.ca

