

Management Practices for High Yielding Spring Wheat

Project duration May 2018 – August 2018

Objectives The objective of project is to quantify the yield benefit of intensive management practices in spring wheat, and to determine if these management practices provide the same benefit to a variety of cultivars.

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Results

The result on the protein analysis will be available at a later date. For yield results by treatment please see Figure 1 – Figure 5. For treatment outline please see Table 1.

Figure 1: Yield results by location and variety for Treatment 1

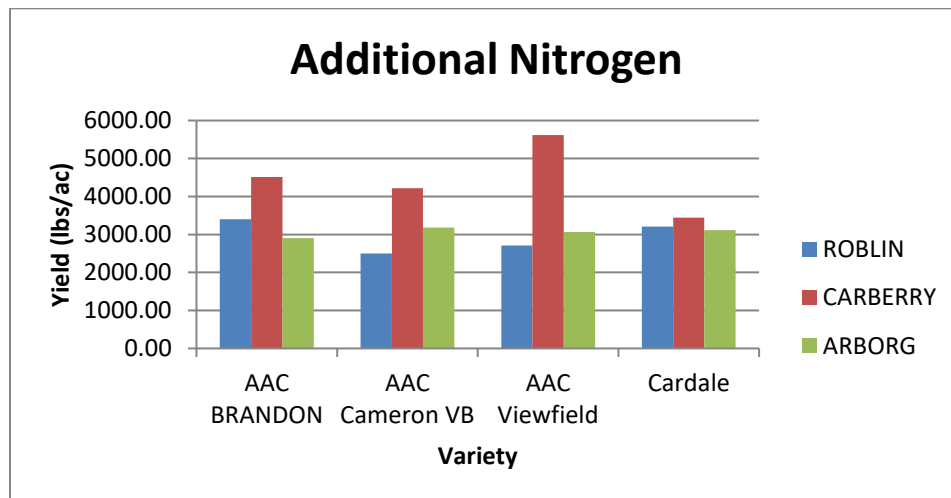


Figure 2: Yield results by location and variety for Treatment 2

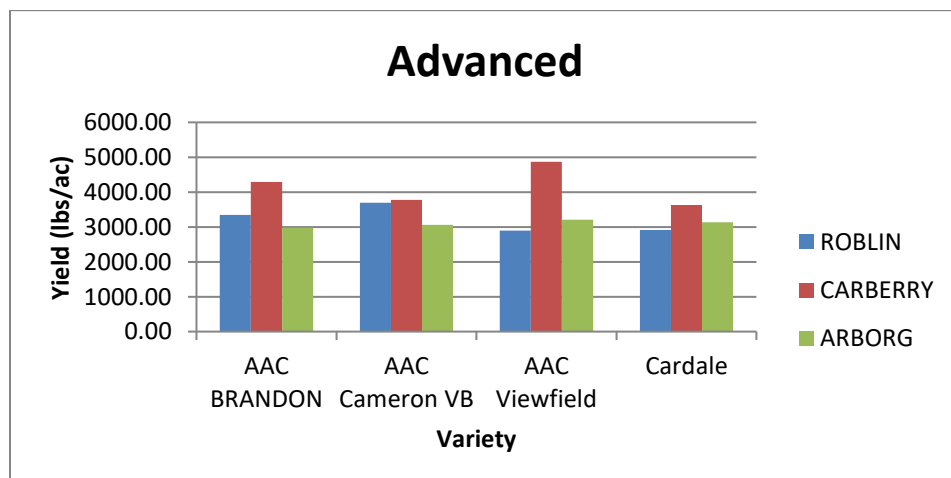


Figure 3: Yield results by location and variety for Treatment 3

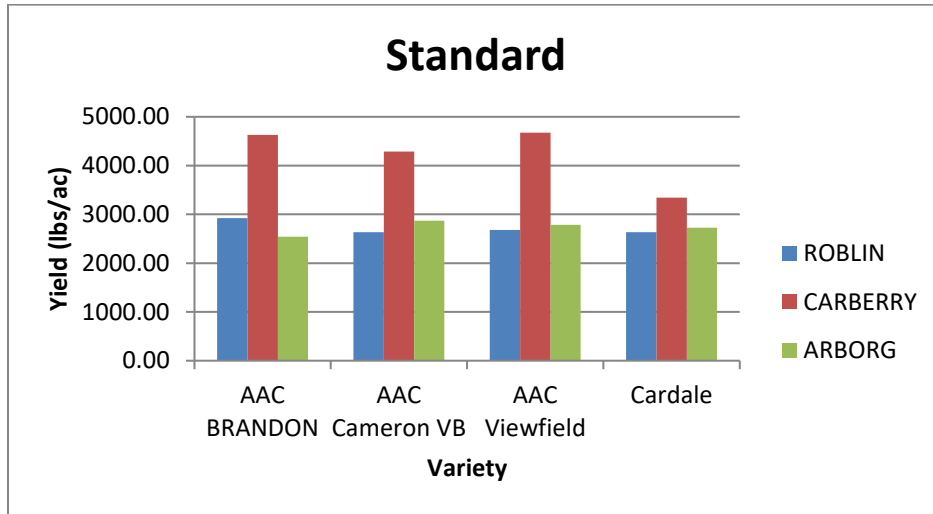


Figure 4: Yield results by location and variety for Treatment 4

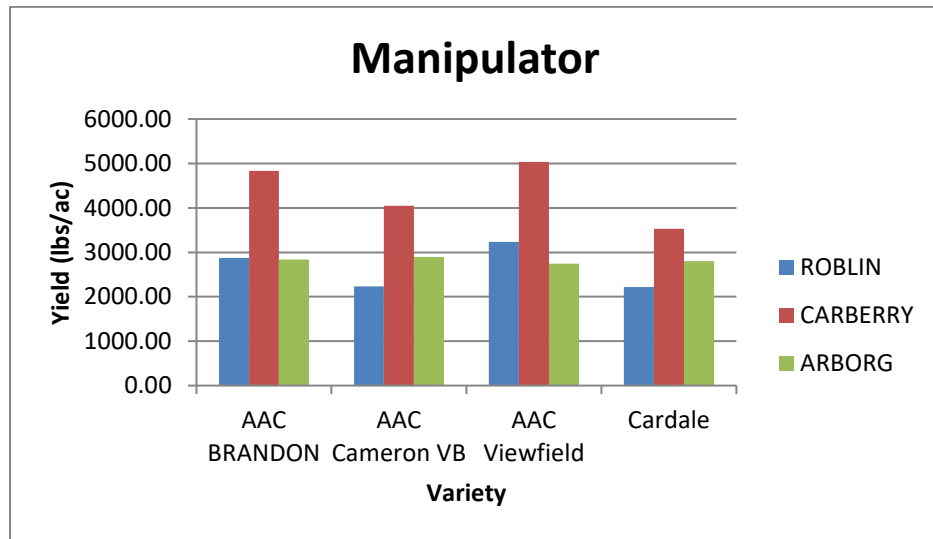
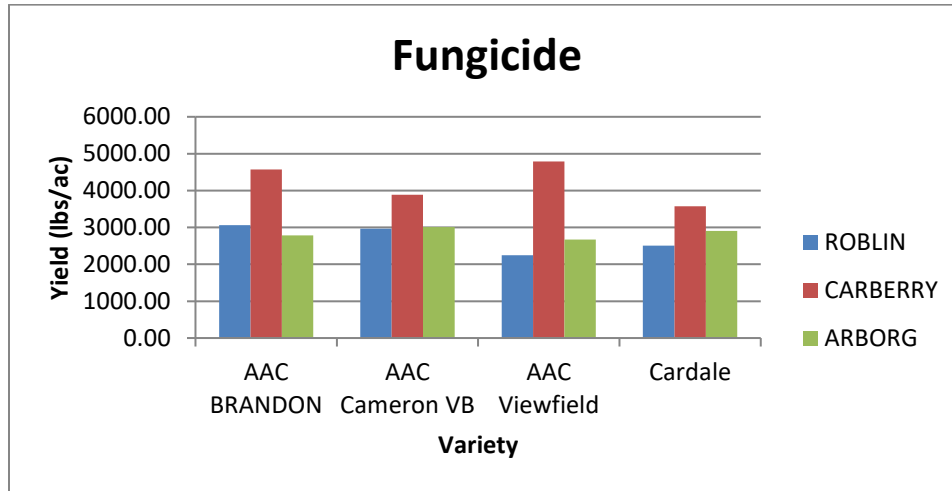


Figure 5: Yield results by location and variety for Treatment 5



Background

The focus of this project is on plant growth regulators (PGRs), fungicides, and higher nitrogen rates.

Targeting higher yields often means increasing nitrogen rates, which brings with it the increased risk of lodging. PGRs are used to improve crop standability, and may be a good fit for a management system with increased nitrogen rates. The PGR “Manipulator” (chlormequat chloride) is registered for use in Canada, but uptake has been limited due to the previous absence of an established maximum residue limit (MRL) for the USA. This limit was set in April of 2018, marking a change in the management practices that are open to Manitoban wheat growers.

Fungicides to control fusarium head blight (FHB) and leaf diseases are commonly used on spring wheat in Manitoba. Previous research has found some evidence of PGRs reducing protein content in spring wheat, but this is potentially not the case when PGRs are applied with fungicides.

The objective of this project is to quantify the yield benefit of intensive management practices in spring wheat, and to determine if these management practices provide the same benefit to a variety of cultivars. This information will help producers make decisions on where to focus their input dollars, and will provide an opportunity to highlight the effects of PGR’s in spring wheat production.

Carberry Materials & Methods

Experimental Design	Random Complete Block Design
Entries	20 – 4 varieties x 5 treatments (<i>see Table 1</i>)
Varieties	AAC Brandon; AAC Viewfield; Cardale; AAC Cameron VB
Seeding	May 15
Harvest	Aug 30
Fertility	See Table 1
In Crop Weed Control	Tundra applied May 29, 2018 Achieve applied June 19, 2018 Roundup applied August, 2018
Plant Growth Regulator	Manipulator

Fungicide

Prosaro applied according to treatments

Table 1: Treatments for Management of High Intensity Spring Wheat

Treatment	N application	Fungicide <i>(Acapella)</i>	PGR <i>(Manipulator)</i>
1	100 lbs/ac	None	None
2	150 lbs/ac	None	None
3	100 lbs/ac	None	Applied at flag leaf
4	100 lbs/ac	At flag leaf and anthesis	None
5	150 lbs/ac	At flag leaf and anthesis	Applied

N banded with seed according to treatments set out in Table 1; P side-banded to 10lb/ac

As demonstrated in Table 1, the treatments involved different combinations of fertilizer rates, with or without fungicide and with or without a PGR.

- Treatment 1 represented a very standard treatment with regards to fertility and no fungicide or PGR.
- Treatments 3 and 4 used the same baseline fertility, however Treatment 3 incorporated PGR (no fungicide) and Treatment 4 incorporated Fungicide (no PGR).
- Treatments 2 and 5 increased the fertility by 50%. Treatment 2 did not incorporate any PGR or Fungicide. Treatment 5, called “Advanced” incorporated all elements of the trial, using increased fertility, and applying both PGR and Fungicide.

Data collected

Date collected

Height	Aug 2
Lodging	Sept 17
Yield	Sept 17
Moisture	Sept 17

Table 2: Carberry Spring 2018 Soil Test

	Available	Needed
N	54 lb/ac	According to treatments
P	14 ppm	20 lb/ac
K	296 ppm	0 lb/ac
S	42 lb/ac	0 lb/ac