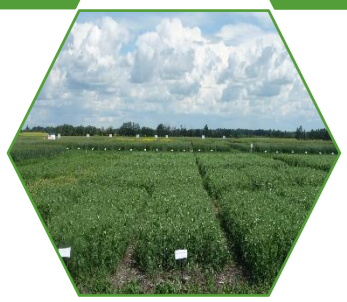
Gateway Research Organization

# 2018 ANNUAL REPORT

Cropping

Forage & Livestock

Enviroment



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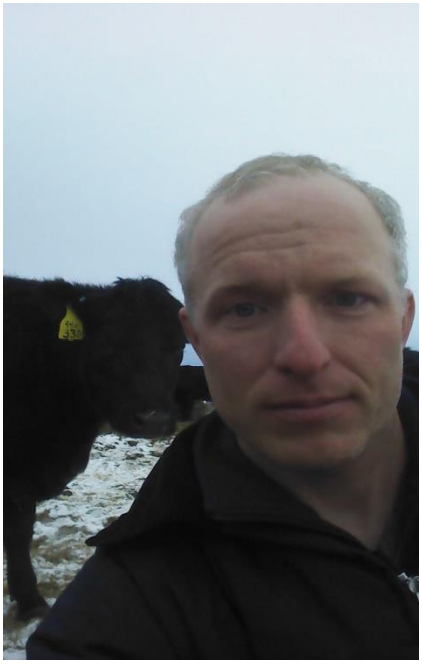
# Chairperson's Report

**Keith Wiart**



Greetings on behalf of the Board of Directors at Gateway Research Organization. This past year has been exciting, with great things happening within GRO.

My name is Keith Wiart, a mixed farmer from Neerlandia. GRO is an important asset to our region and it is great to be part of it. I am proud of the accomplishments GRO has made in the last few years. Our exposure is growing, the quality of research is improving, and we are hosting more events all the time. This was my sixth and final year on the board for this term. It has been an honor to serve with a diverse group of producers on the board. We have a wide range of perspectives, but a common interest in unbiased, practical, local research. I would like to thank my fellow board members for their support and commitment to this organization.

Thanks to our staff for another successful year. We had over 1300 plots seeded in multiple locations, many field days and events all over the region. Sandeep has done a great job of planning events, projects and managing. Our finances are doing great and he has done a wonderful job of securing funding and projects. Thanks to Rick and our summer staff for making the research plots and the heifer pasture go so well. Rick has done a great job of maintaining our equipment and his expertise is truly valuable to GRO. All the frustrations we went through with harvest this last fall were felt by the staff at GRO too, thanks for the hard work. Amber Kenyon joined our staff last spring to fill the role of On Farm Energy Management Coordinator. She has gotten up to speed quickly and fits the role remarkably, putting on many events throughout northern Alberta.

Chelsea Pellerin has completed her six year term and will be retiring from the board. Thanks Chelsea for your enthusiasm and dedication to GRO.

GRO is here for us as producers. Thank you for your membership and interest in our events throughout the last year.

# Manager's Report

**Sandeep Nain**

It's been a great three years since September 2015, with a wonderful organization. I owe a tremendous debt of gratitude to Chelsea and others on the board for giving me this career-changing opportunity. In starting days, I remember getting tensed about the small details and kind of support from the neighboring municipalities and other industry groups. However, things are working in the right direction and I can sense GRO name has increased its reach to producers and industry stakeholders. I am grateful that a lot of GRO members are coming to our office and asking to work on something they think will be a good project for fellow producers. The work we do truly would not be possible without the support of local producers who believe in the value that applied research associations provide to the industry. GRO has taken some big stride with the inclusion of the environmental side of farmers. Everything we had done in last year, our goal was to strive to be the best and may be the first one to do that in our region. The board of director had provided me support and guidance to the right path of success. I myself is constantly trying to learn more and find new innovative ideas to excel in our organization.

We had a beautiful looking site again and a very well-attended crop walk. This would have not been possible without the help from summer staff Sami, Lilli and Fito. A special thanks to Jubilee Feedlot, Pibroch colony and Randy Pidsadowski, John Guelly, Greg Thompson and Ken Anderson, who provided support with our trial at Westlock, Barrhead, and Fort Assiniboine. Many thanks to Westlock, Barrhead, Lac Ste. Anne, Woodlands, Thorhild and Parkland Counties for their continued support with our trials and demonstrations. We are always searching for fresh ideas to put into action.  Any suggestions for demonstrations or research trials are always welcome.

I would like to thank my outgoing Board of directors, Keith Wiart and Chelsea Geiger for their outstanding commitment to the producers of the North Central Alberta.

## 2018-Board of Directors & Committee


Keith Wiart – Chairperson$
RR1 Barrhead, AB T7N 1N2
780-307-1564
neerfarmer@gmail.com

Steve Kenyon- Treasurer
Box 188 Busby, AB T0G 0H0
780-307-6500
skenyon@mcsnet.ca

Rusty Bellamy- Vice Chair
Box 1863 Athabasca, AB T9S 2B5
780-689-7558
Bigcouleefarms.ab@gmail.com

Chelsea Pellerin- Secretary
Box 35 Twatinaw, AB T0G 2E0
780-307-6617

Tom McMillan- ARECA Rep
RR#2 Pickardville, AB T0G 1W0
780-349-9415
mcmfarms@mcsnet.ca

**Crop committee**

Tom McMillan- Chair
Keith Wiart

Ken Anderson
RR#1 Barrhead, AB T7N 1N2
780-674-1940
agseed@xplornet.com

Janine Paly
Box 778 Thorhild, AB T0A 3J0
780-307-5978
jorichowski@hotmail.com

Justin Nanninga
2505 Twp RD 620
Barrhead, AB T7N 1N2
780-307-4343
forwardseedfarm@gmail.com

---

**Forage and Livestock Committee**
Kelly Olson- Chair
Box 420 Athabasca, AB T9S 2A4
780-689-7822

Bill Visscher
25312 TWP rd 554
Sturgeon County, AB T8R 2G6
780-669-7627
smokinelkranch@xplornet.ca

Kenleigh Pasay
Box 688 Redwater, AB T0A 2W0
587-432-4355

Dale Grieg (Ex-officio- Barrhead County Rep)
RR#2 Barrhead, AB T7N 1N3
780-305-8246

Steve Kenyon
Rusty Bellamy
Chelsea Pellerin
Keith Wiart

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HR Committee - Rusty Bellamy- Chair, Chelsea Pellerin, Kelly Olson, Keith Wiart

Equipment - Justin Nanninga-Chair, Tom McMillan, Keith Wiart

## Acknowledgement to Sponsor

**The Board of Directors and staff extends their sincere appreciation for the active support for our research programs**

**Program Funding**

Alberta Government

Westlock County – growing opportunity

County of Barrhead

LAC STE. ANNE COUNTY

parkland county

Woodlands County

Thorhild County

**Project and Extension Sponsorship**

Alberta Wheat Commission

Alberta Barley

Alberta Canola Producers Commission

Prairie Oat Growers Association

Alberta Pulse Growers

FP Genetics

Canterra Seeds

FBC – We make life less taxing

ALMA – Alberta Livestock and Meat Agency Ltd.

Nutrien Ag Solutions

**In-Kind Contributors**

(Including a combination of goods, land, equipment, product, services, percentage markdowns, etc.)

**Special thanks to "Jubilee Feedlot, Pibroch Colony and Randy Pidsadowski" for their support.**

- WESTLOCK SEED CLEANING CO-OP LTD
- Agriculture and Agri-Food Canada
- Anderson Seed Growers

# Gateway Research Organization

## Our History

Gateway Research Organization was formed from consolidation with the Pembina Forage Association in 1994. The Pembina Forage Association was started in 1975 by local producers interested in pasture management and forage & livestock research. While maintaining its interest in forage & livestock issues, the new organization became more involved in applied research and demonstrations in crops and environmental sustainability.

## Our Vision

Gateway Research Organization will be a renowned and respected agriculture research and extension organization that is the preferred source of unbiased farm production information.

## Our Mission

Gateway Research Organization provides cost-effective applied agricultural research, demonstration, and extension for producers in order to facilitate greater returns to farms by providing economically and scientifically sound information that enables our clients to make informed decisions.

## The Goals of our Organization

1. To increase the profitability of our members.
2. To encourage active participation by local producers.
3. To provide a valuable resource for information transfer and extension to producers.
4. To produce high quality, unbiased, and scientifically sound research.
5. To produce research based on local growing conditions and soil properties.
6. To collaborate with specialists from the agricultural industry, government, and educational institutions.

# 2018 Extension Activities (Crops)

## 2018 AGRONOMY UPDATE

March 13

Hazel Bluff Hall
Registration (includes hot lunch)- $10 for 2018 GRO Members, $30 for Non-Members
GRO Membership- $30
Call or text 780-249-1440 to register

### SCHEDULE

| | |
|---|---|
| 9:30AM | REGISTRATION & COFFEE |
| 10:00AM | TRENT WHITING- BARLEY |
| 10:45AM | CLAIR LANGOUIS- WHEAT |
| 11:15AM | MURRAY HARTMANN- CANOLA AND FLAX |
| 12:15PM | LUNCH |
| 1:00PM | SCOTT MEERS- INSECT UPDATE |
| 2:00PM | ROBYN BOWNESS- PULSES |

GATEWAY RESEARCH ORGANIZATION

**June 22, 2018**
**8:00 am - 10:30 am**
**Hazelbluff Hall**

## Stop the Fusarium

**Field Demo Day**

Topics to be covered include value of seed testing, proper application and use of seed treatments, FHB timing and spraying techniques
Get answers from the experts on all the tools to reduce the risk

Call to Register: 780-349-4546 or 780-249-1440

Bus ride to canolaPALOOZA hosted by Bill Chapman & Sandeep Nain

Starting time:
Westlock CPS-7.30 AM
Barrhead CPS- 8.00 AM
Stony Plain Seed Cleaning Plant - 8.55 AM

Back by: 6.30 pm

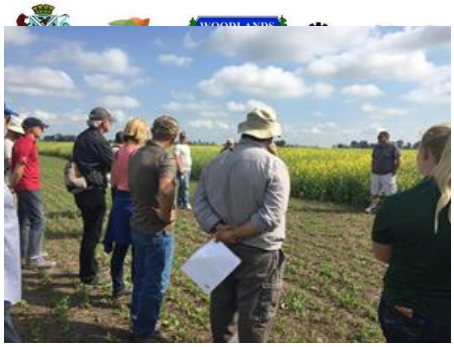
canolaPALOOZA

June 27th, 2018 | Lacombe, AB

GET AN EXPERT ANSWER TO EVERY CANOLA QUESTION

To Register call or text 780-249-1440 or 780-349-0300
$20 include breakfast & refreshments on return
Please bring Cash for food truck at lunch

Thanks to our sponsor



Gateway Research Organization
Presents

## 2018 Cut The Crop Tour

*One of the most informative crop events of the season is quickly coming upon us! Don't miss the opportunity on **Tuesday, July 31 from 8:30 am to 1:00 pm at Pibroch Hall** to come and see firsthand what your research association has been up to!*

**Let's cut the crop! What varieties of crops will work best in your fields?**

- Over 1000 research plots on all the popular and upcoming varieties of – **Wheat, Barley, Oat, Flax, Triticale**
- **Canola Performance Variety Trial (31 varieties RR-CL-LL).**
- **Yellow & Green Peas & Fababeans Variety Trial (22 varieties).**
- Alternate cropping demo trial including **Lentils, Soybeans** Canary seeds & Camelina
- Best Milling type Oats (POGA & FP Genetics)
- Urea/ESN Fertilizer trial (AWC)
- Popular Wheat Varieties comparison
- Regional silage trial

*To get in on this opportunity register with Sandeep Nain at (780)349-4546, (780)249-1440 or at grohome@telus.net*

***Registration Fee: $30 for non-members and free for GRO members***

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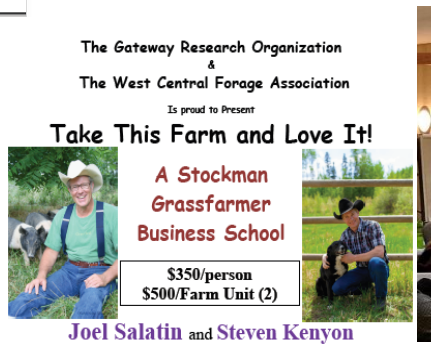
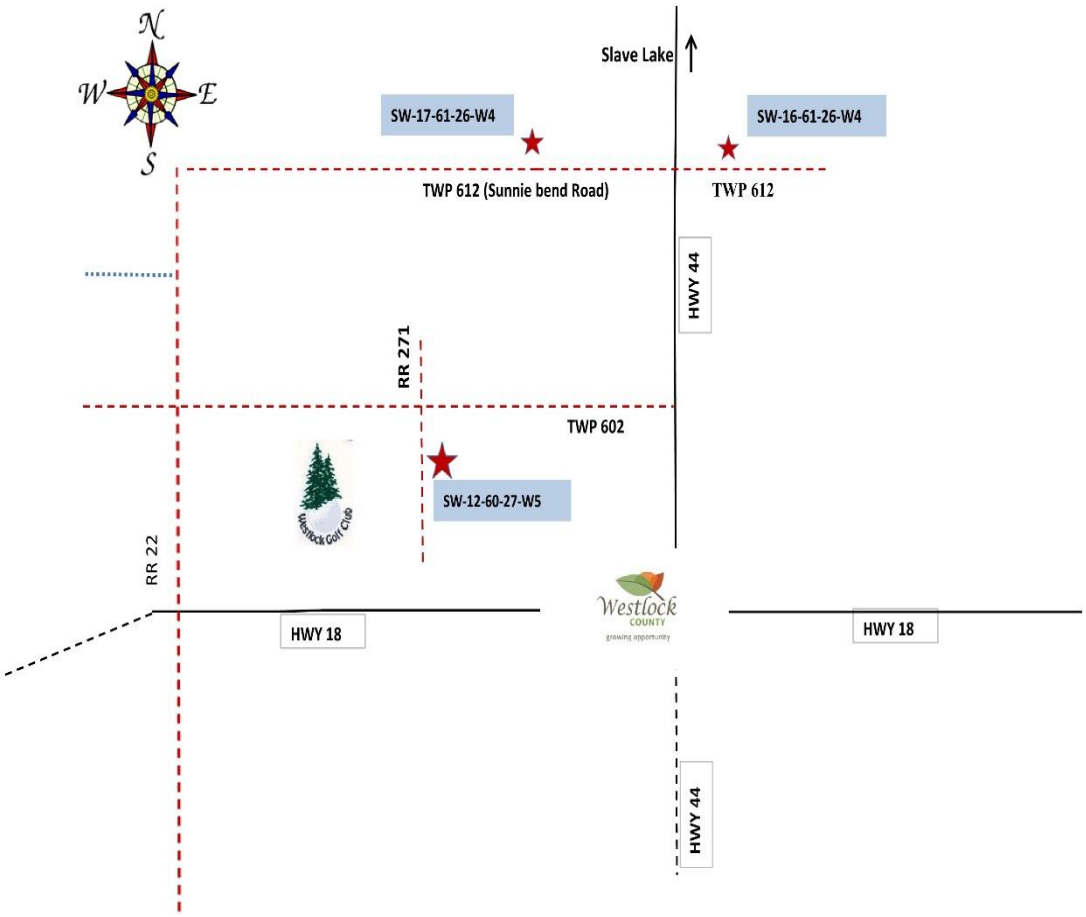
# 2018 Extension Activities (Livestock)






**GRO site location map for 2018 trials**

Gateway Research Organization

# Regional Cereal Variety Trials

**Co-operators: Pibroch Colony – SW-16-61-26-W4**

**Objectives:** To provide yield and agronomic information of current cereal varieties as well as newer varieties to producers in west central Alberta.

## Introduction

Variety selection plays an important role in production management due to the impact that yield, maturity, and other agronomic characteristics can have on producer profitability. Variety testing continues to be important in providing producers with information on the performance of newly registered and established varieties. The yield and characteristics of cereals grown in our region are presented below.

| RVT - Project Description | |
|---|---|
| **Seeding Date** | May 15 May 18 for Flax |
| **Seeding Specifics** | Fabro zero till drill<br>Seeding Depth: 1 inch for Cereals and 0.75 for Flax<br>**Seeding Rates:**<br>27 plants/$ft^2$ - 2-Row & 6-Row Barley<br>31 plants/$ft^2$ - HRS & Utility Wheat,<br>28 plants/$ft^2$ - Oats<br>75 plants/$ft^2$ - Flax<br>Seed treatment: Raxil |
| **RVT - Project Description** | |
| **Fertilizer/ac** | **Fertilizer Seed placed** 11-52-0 at 48 lbs/ac<br>**Fertilizer Side Banded** 22-0-26-2-.44Cu at 226 lbs/ac<br>**Deep Banded** *82-0-0 100 lbs/ac |
| **Herbicide** | Cleanstart Label rates May 17 ;<br>Curtail M, 810ml/acre June 7<br>Buctril M 400ml/acre + Axial @243ml/acre June 19 |

| | | | |
|---|---|---|---|
| | Poast | 180ml/acre | June 18 (Flax only) |
| | Roundup @ 360gai/ac + Reglone Ion @750ml/ac tank mix **Sept 4** | | |
| **Harvest Date** | Sept 6 (2-Row & 6-Row Barley)<br>Sept 27 (Oat)<br>Sept 28 (Wheat)<br>Oct 18 (Flax) | | |

**2-Row Barley** – The majority of malt-grade barley produced is two-row. Two-row barley is characterized by having only one fertile spikelet at each node. Six-row barley has three fertile spikelets at each node. This lack of crowding in two-row barley allows for straight, symmetrical kernels with low dormancy; key characteristics essential for malting. The malting process begins by soaking the grain and causing it to germinate. The low dormancy and high seed viability in two-row barley are important for this process.

**6-Row Barley**- The world's most important crop for feeding livestock. As feed, it is nearly equal in nutritive value to corn, which is very high in energy. This leads it to be valuable in feedlots and as hog feed. Six-row barley allows for desirable portions of firm fat and lean meat.

## Table 2. Barley Varieties: Westlock

| Malt Barley | Type | Awn | % of Check AC Metcalf | Height (CM) | | Yield kg/ha | | Yield bu/ac | | Bushel wt lb/bu | | Tst Wt kg/HL | | TKW(g) 1000 Seeds | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **AC METCALFE** | 2 | R | 100 | 91 | def | 7688 | ab | **143** | **ab** | 56 | bc | 69.5 | bc | 52 | a |
| **AAC CONNECT** | 2 | R | 102 | 91 | def | 7887 | ab | **147** | **ab** | 55 | bc | 68.4 | bc | 56 | a |
| **AAC SYNERGY** | 2 | R | 104 | 89 | def | 8001 | ab | **149** | **ab** | 55 | c | 67.2 | c | 53 | a |
| **CDC COPELAND** | 2 | R | 98 | 101 | bcd | 7523 | ab | **140** | **ab** | 57 | bc | 70.2 | bc | 52 | a |
| **CDC GOLDSTAR** | 2 | R | 103 | 94 | cde | 7963 | ab | **148** | **ab** | 56 | bc | 69.0 | bc | 52 | a |
| **LOWE** | 2 | R | 103 | 94 | cde | 7926 | ab | **147** | **ab** | 56 | bc | 68.7 | bc | 54 | a |
| **SIRISH** | 2 | R | 111 | 80 | fg | 8513 | a | **158** | **a** | 55 | bc | 68.1 | bc | 54 | a |
| **CDC COPPER** | 2 | R | 103 | 85 | efg | 7956 | ab | **148** | **ab** | 56 | bc | 68.5 | bc | 53 | a |
| **TR15155** | 2 | R | 106 | 85 | efg | 8187 | ab | **152** | **ab** | 56 | bc | 69.2 | bc | 51 | a |
| **TR16629** | 2 | R | 104 | 104 | abc | 7988 | ab | **148** | **ab** | 56 | bc | 68.4 | bc | 49 | ab |
| **GENERAL PURPOSE** | | | | | | | | | | | | | | | |
| **AC METCALFE** | 2 | R | 100 | 91 | def | 7688 | ab | **143** | **ab** | 56 | bc | 69.5 | bc | 52 | a |
| **ALTORADO** | 2 | R | 105 | 86 | efg | 8084 | ab | **150** | **ab** | 57 | bc | 69.9 | bc | 54 | a |
| **CDC AUSTENSON** | 2 | R | 108 | 93 | c-f | 8284 | ab | **154** | **ab** | 57 | b | 70.9 | b | 55 | a |
| **CLAYMORE** | 2 | R | 113 | 97 | b-e | 8666 | a | **161** | **a** | 56 | bc | 68.5 | bc | 52 | a |
| **OREANA** | 2 | R | 104 | 74 | g | 7984 | ab | **148** | **ab** | 57 | bc | 70.3 | bc | 53 | a |
| **SR14501** | 6 | R | 112 | 109 | ab | 8653 | a | **161** | **a** | 56 | bc | 69.0 | bc | 50 | ab |
| **AB Advantage** | 6 | S | 111 | 115 | a | 8562 | a | **159** | **a** | 56 | bc | 68.6 | bc | 51 | |
| **Hulless** | | | | | | | | | | | | | | | |
| **CDC ASCENT** | 2 | R | 82 | 87 | efg | 6301 | b | **117** | **b** | 65 | a | 80.1 | a | 44 | b |
| **CV** | | | | 4.65 | | 8 | | 8.41 | | 1.44 | | 1.45 | | 4.63 | |

* Varieties that **share a letter** **did not differ significantly** from one another (p>0.05). Check variety is AC Metcalfe; ** Awn R = Rough Awn

**Hard Red Spring (HRS) Wheat** – The Canadian Grain Commission currently classes 56 varieties under the Canadian Western Red Spring (CWRS) class. HRS is known for its hard texture, high protein, and high gluten content. These attributes contribute to making superior bread making flour. The top two grades, No. 1 and No. 2, are segregated by protein level, with guaranteed minimum protein contents.

**Utility Wheat** – The Western Canadian wheat classes consist of eight individual descriptions. This trial consisted of two classes: Canadian Prairie Spring Red (CPSR) and Canadian Wheat Soft White Spring (CWSWS).

**CANADA PRAIRIE SPRING RED** (**CPSR**) has medium to hard kernels and medium to hard dough strength. It has two milling grades and is used for the hearth, flat, and steamed bread, and noodles.

**CANADA WESTERN SOFT WHITE SPRING (CWSWS)** is soft white wheat with low protein. It has three milling grades used for cookies, cakes, and pastry. CWSWS is also highly sought after by the industrial ethanol industry on account of its low protein content (i.e. high starch content).

**Canada Northern Hard Red (CNHR)** is the red spring wheat with medium to hard kernels, very good milling quality and medium gluten strength (lower than both the CWRS and CPSR classes). Introduced on August 1, 2016, the target quality of this class is for it to have sound kernels. There are three milling grades available. Depending on protein content, CNHR will be suitable for the production of pan bread, hearth bread, flat bread and noodles.

**Canada Western Special Purpose (CWSP):** special purpose wheat class is for varieties for ethanol or livestock feed markets.

## Table:3 Canadian Western Red Spring (CWRS) class

| Treatment | % of Check Carberry | Height (cm) | | Yield kg/ha | | Yield bu/ac | | Bushel wt lb/bu | | Tst Wt kg/HL | | TKW(g) 1000 Seeds | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CARBERRY** | 100 | 86 | # | 5554 | # | **83** | # | 59 | d | 73 | d | 41 | a-f |
| **AAC ALIDA VB** | 78 | 86.7 | # | 4352 | # | **65** | # | 62 | a-d | 76 | a-d | 41 | a-f |
| **AAC BRANDON** | 106 | 87.3 | # | 5876 | # | **87** | # | 61 | a-d | 75 | a-d | 41 | a-f |
| **AAC CIRRUS** | 91 | 83.3 | # | 5053 | # | **75** | # | 60 | bcd | 74 | bcd | 33 | j |
| **AAC JATHARIA VB** | 105 | 93 | # | 5816 | # | **86** | # | 63 | abc | 78 | abc | 40 | b-g |
| **AAC TISDALE** | 87 | 85 | # | 4822 | # | **72** | # | 61 | a-d | 75 | a-d | 39 | b-h |
| **AAC VIEWFIELD** | 109 | 82.3 | # | 6065 | # | **90** | # | 60 | a-d | 75 | a-d | 37 | d-j |
| **AAC WARMAN VB** | 94 | 99 | # | 5201 | # | **77** | # | 62 | a-d | 76 | a-d | 38 | c-i |
| **BW1041** | 100 | 89.3 | # | 5537 | # | **82** | # | 61 | a-d | 76 | a-d | 44 | ab |
| **BW1045** | 90 | 84 | # | 5011 | # | **74** | # | 60 | cd | 74 | cd | 42 | a-e |
| **BW1049** | 101 | 84.7 | # | 5619 | # | **84** | # | 61 | a-d | 76 | a-d | 41 | a-f |
| **BW5005** | 89 | 89.7 | # | 4966 | # | **74** | # | 61 | a-d | 75 | a-d | 40 | b-g |
| **BW5007** | 91 | 84.7 | # | 5042 | # | **75** | # | 60 | bcd | 74 | bcd | 40 | b-h |
| **BW5011** | 103 | 84.3 | # | 5709 | # | **85** | # | 62 | a-d | 76 | a-d | 42 | a-d |
| **BW5013** | 84 | 78.3 | # | 4688 | # | **70** | # | 62 | a-d | 76 | a-d | 39 | b-i |
| **CDC ADAMANT** | 78 | 84 | # | 4321 | | **64** | | 62 | a-d | 77 | a-d | 36 | f-j |
| **CDC GO** | 114 | 86 | # | 6349 | # | **94** | # | 61 | a-d | 76 | a-d | 46 | a |
| **CDC HUGHES** | 79 | 79.7 | # | 4397 | # | **65** | # | 64 | a | 79 | a | 42 | a-d |
| **CDC LANDMARK VB** | 93 | 83.3 | # | 5160 | # | **77** | # | 63 | ab | 78 | ab | 44 | abc |
| **PARATA** | 89 | 80.3 | # | 4938 | # | **73** | # | 61 | a-d | 75 | a-d | 36 | e-j |
| **PARKLAND** | 91 | 88.7 | # | 5077 | # | **75** | # | 62 | a-d | 77 | a-d | 37 | d-j |
| **PT596** | 101 | 88.3 | # | 5584 | # | **83** | # | 62 | a-d | 77 | a-d | 33 | ij |
| **PT782** | 76 | 87.7 | # | 4230 | # | **63** | # | 62 | a-d | 77 | a-d | 35 | g-j |
| **PT785** | 95 | 89.7 | # | 5273 | # | **78** | # | 61 | a-d | 75 | a-d | 34 | hij |
| **STETTLER** | 92 | 86.7 | # | 5126 | # | **76** | # | 59 | d | 73 | d | 39 | c-i |
| **SY SOVITE** | 86 | 89.7 | # | 4760 | # | **71** | # | 60 | a-d | 75 | a-d | 44 | ab |
| **CV** | | 8.12 | | 16.69 | | 16.69 | | 1.73 | | 1.73 | | 4.32 | |

Varieties that share a letter did not differ significantly from one another (p>0.05).

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# Table 4: Utility Wheat: CANADA PRAIRIE SPRING RED: (CPSR) – Westlock

| Treatment | % of Check CARBERRY | Height (cm) | | Yield kg/ha | | Yield bu/ac | | Bushel wt lb/bu | | Tst Wt kg/HL | | TKW(g) 1000 Seeds | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CARBERRY** | 100 | 88 | b | 5247 | * | **81** | * | 59 | * | 73 | * | 41 | cd |
| **AAC BRANDON** | 118 | 84 | bc | 6448 | * | **96** | * | 60 | * | 73 | * | 42 | bcd |
| **AAC ENTICE** | 107 | 85 | bc | 5848 | * | **87** | * | 58 | * | 72 | * | 41 | d |
| **AAC GOODWIN** | 125 | 87 | bc | 6841 | * | **102** | * | 61 | * | 75 | * | 43 | a-d |
| **AAC PENHOLD** | 113 | 78 | d | 6195 | * | **92** | * | 60 | * | 74 | * | 47 | a |
| **CDC TERRAIN** | 120 | 92 | a | 6531 | * | **97** | * | 59 | * | 73 | * | 45 | ab |
| **HY2003 VB** | 117 | 84 | bc | 6402 | * | **95** | * | 59 | * | 73 | * | 44 | abc |
| **SY ROWYN** | 111 | 83 | c | 6055 | * | **90** | * | 61 | * | 75 | * | 36 | e |
| **CANADA NORTHERN HARD RED** | | | | | | | | | | | | | |
| **AC FOREMOST** | 116 | 77 | d | 6334 | * | **94** | * | 61 | * | 75 | * | 44 | a-d |
| **CV** | | 2.09 | | 17.6 | | 17.61 | | 2.31 | | 2.31 | | 3.14 | |

Varieties that share a letter did not differ significantly from one another (p>0.05).

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## Table 5: Utility Wheat - Westlock

| Treatment | % of Check Carberry | Height (cm) | | Yield kg/ha | | Yield bu/ac | | Bushel wt lb/bu | | Tst Wt kg/HL | | TKW(g) 1000 Seeds | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CANADA WESTERN SOFT WHITE SPRING** | | | | | | | | | | | | | |
| CARBERRY | 100 | 85 | * | 5001 | c | **74** | **c** | 59 | * | 73 | * | 40 | * |
| AAC BRANDON | 112 | 83 | * | 5583 | bc | **83** | **bc** | 59 | * | 73 | * | 40 | * |
| AAC AWESOME | 136 | 89 | * | 6803 | ab | **101** | **ab** | 58 | * | 72 | * | 43 | * |
| AAC PARAMOUNT | 149 | 94 | * | 7454 | a | **111** | **a** | 59 | * | 73 | * | 42 | * |
| AC ANDREW | 145 | 88 | * | 7256 | a | **108** | **a** | 60 | * | 74 | * | 40 | * |
| AC SADASH | 146 | 87 | * | 7305 | a | **109** | **a** | 59 | * | 73 | * | 40 | * |
| **CANADA WESTERN SPECIAL PURPOSE** | | | | | | | | | | | | | * |
| PASTEUR | 148 | 88 | * | 7414 | a | **110** | **a** | 62 | * | 76 | * | 41 | |
| KWS ALDERON | 147 | 78 | * | 7345 | a | **109** | **a** | 56 | * | 69 | * | 39 | * |
| KWS CHARING | 134 | 81 | * | 6704 | ab | **100** | **ab** | 55 | * | 68 | * | 42 | * |
| KWS SPARROW | 139 | 80 | * | 6938 | ab | **103** | **ab** | 58 | * | 72 | * | 40 | * |
| CV | | 6.53 | | 8.99 | | 8.98 | | 4.06 | | 4.05 | | 5.02 | |

Varieties that share a letter did not differ significantly from one another (p>0.05).

**Feb 22, 2018**

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**Oats** – Oats are a valuable part of crop rotation. They provide disease and insect breaks for wheat, barley, and canola. Their rapid establishment and growth provide excellent weed suppression. Oats also work well as a "catch crop" for taking up and storing excess nitrogen, and the straw provides a nutrient source for the following year's crop. The straw also protects against soil erosion and contributes to an increase in the soils organic matter content.

**Table 6. Oats**

| Treatment | % of Check CDC Dancer | Height (cm) | Yield kg/ha | Yield bu/ac | Bushel wt lb/bu | Tst Wt kg/HL | TKW(g) 1000 Seeds |
|---|---|---|---|---|---|---|---|
| **CDC DANCER** | 100 | 117 bc | 7412 d | **194** d | 42 ab | 52 ab | 40 b |
| **AC MORGAN** | 114 | 115 bc | 8451 abc | **222** abc | 42 ab | 51 ab | 45 a |
| **AC MUSTANG** | 111 | 133 a | 8226 a-d | **216** a-d | 43 a | 53 a | 42 ab |
| **CDC ARBORG** | 122 | 122 b | 9054 a | **237** a | 41 ab | 51 ab | 46 a |
| **CDC RUFFIAN** | 103 | 108 cd | 7609 bcd | **199** bcd | 41 ab | 50 ab | 45 a |
| **CFA1502** | 115 | 112 bcd | 8528 ab | **224** ab | 41 ab | 51 ab | 45 a |
| **CS CAMDEN** | 108 | 109 cd | 7996 bcd | **210** bcd | 40 b | 50 b | 45 a |
| **KARA** | 107 | 105 d | 7911 bcd | **207** bcd | 42 ab | 52 ab | 45 a |
| **ORE 3541 M** | 101 | 113 bcd | 7481 cd | **196** cd | 41 b | 50 b | 44 a |
| **ORE 3542 M** | 101 | 108 cd | 7522 cd | **197** cd | 41 b | 50 b | 45 a |
| **OT3087** | 110 | 121 b | 8159 a-d | **214** a-d | 42 ab | 51 ab | 44 a |
| **CV** | | 2.09 | 17.6 | 17.61 | 2.31 | 2.31 | 3.14 |

Varieties that **share a letter did not differ significantly** from one another (p>0.05).

**Feb 22, 2018**

**Triticale:** is the first man-made crop species, is initially produced by crossing wheat (genus Triticum) with rye (Secale). When crossing wheat and rye, wheat is used as the female parent and rye as the male parent (pollen donor). The development of triticale as a cereal crop in Canada first began in 1954 at the University of Manitoba, Winnipeg. Triticale is still a minor crop in Canada. Triticale is grown mostly for forage or fodder, although some triticale-based foods can be purchased at health food stores and can be found in some breakfast cereals.

| Treatment | Height (cm) | Yield kg/ha | Yield bu/ac | Bushel wt lb/bu | Tst Wt kg/HL | TKW(g) 1000 Seeds |
|---|---|---|---|---|---|---|
| **Brevis** | 117 * | 7865 * | **117 *** | 58 * | 72 * | 43 b |
| **AAC delight** | 115 * | 7888 * | **117 *** | 57 * | 71 * | 55 a |

**Flax –** grown mainly in cool northern climates. High omega-3 fatty acid and fiber in flax are some of the health benefits. Used in livestock feeding, human consumption, and many other industrial uses.

**Table 7. Flax**

| Treatment | % of Check CDC Bethune | Height (cm) | Yield kg/ha | Yield bu/ac | TKW(g) 1000 Seeds |
|---|---|---|---|---|---|
| **CDC BETHUNE** | 100 | 73 ab | 2348 bc | **37 bc** | 8.6 b |
| **AAC BRIGHT** | 108 | 73 ab | 2542 ab | **40 ab** | 8.2 bc |
| **AAC MARVELOUS** | 120 | 75 a | 2821 a | **45 a** | 8.4 b |
| **AAC PRAIRIE SUNSHINE** | 101 | 76 a | 2382 bc | **38 abc** | 7.8 c |
| **CDC DORADO** | 87 | 67 b | 2042 c | **33 c** | 9.0 a |
| **CDC GLAS** | 104 | 76 a | 2502 ab | **39 abc** | 8.3 bc |
| **FP2513** | 112 | 76 a | 2626 ab | **42 ab** | 6.6 d |

Varieties that share a letter did not differ significantly from one another (p>0.05).

Overall 2018, was not a good year for flax. Delayed maturity and less growing temperature in later season posed many to challenge for a decent economic viable crop.

# Regional Pulse Variety Trial

## Co-operators: Jubilee Feedlot- SW-12-60-27-W5

### Objectives:

- To provide yield and agronomic information of Green pea, Yellow peas and Fababeans commercial varieties and experimental lines for adaptability and yield potential to producers in west central Alberta.
- To promote crop diversification and increase pulse production acres in area

### Introduction:

Variety selection plays an important role in production management due to the impact that yield, maturity, and other agronomic characteristics, such as standability or harvestability for pulses crops that can affect a producer's profitability. Variety testing continues to be important in providing producers with information on the performance of newly registered and established varieties.

### Agronomic details:

| Trial | Date Seeded Soil Temp | Seed Depth (in) | Fertilizer Seed Placed | Fertilizer Side Banded and *Deep Banded | Herbicides Fungicides Insecticides | Rate | Date |
|---|---|---|---|---|---|---|---|
| **RVT Peas** | May 9<br>16.0 C | 1.5 | 11-52-0<br>46 lbs/ac | 8-0-43-5<br>120 lbs/ac | Viper ADV<br>+ UAN<br><br>Headline<br><br>Reglone @ 2L/ac | 404ml/acre<br>810ml/acre<br><br>200ml/acre | June 7<br><br>July 26<br><br>August 22 |
| **RVT Fababeans** | May 9<br>16.0 C | 1.5 | 11-52-0<br>46 lbs/ac | 8-0-43-5<br>120 lbs/ac | Viper ADV<br>+ UAN<br><br>Headline<br><br>Roundup @ 360gai/ac +<br>Reglone @ 1.6L/ac | 404ml/acre<br>810ml/acre<br><br>200ml/acre | June 7<br><br>July 26<br><br>Sept 19 |

**Harvest Peas: September 5** and **Fababeans: 0ctober 19**

Special Note: GRO experienced a severe hailstorm on July 20 at pulse site (Estimated damage from (30-50%). The headline, a fungicide was sprayed as a proactive measure to minimize the loss of hail.

The yield and characteristics of different pulse crop varieties options grown in our region are presented below.

| Yellow Peas | % of Check CDC Meadow | VINE Length (cm) | Yield kg/ha | Yield bu/ac | Bushel wt lb/bu | Tst Wt kg/HL | TKW(g) 1000 Seeds |
|---|---|---|---|---|---|---|---|
| **CDC MEADOW** | 100 | 71 ab | 5578 e | **83 e** | 69 a | 85 a | 248 f |
| **CDC AMARILLO** | 108 | 75 ab | 6025 cde | **90 cde** | 68 ab | 84 ab | 260 ef |
| **AAC BARRHEAD** | 115 | 72 ab | 6439 a-d | **96 a-d** | 68 ab | 84 ab | 271 cde |
| **AAC CARVER** | 111 | 71 ab | 6203 bcd | **92 bcd** | 68 ab | 84 ab | 273 cde |
| **AAC CHROME** | 125 | 66 b | 6981 a | **104 a** | 67 b | 82 b | 288 bc |
| **AAC LACOMBE** | 120 | 84 a | 6693 ab | **100 ab** | 68 ab | 83 ab | 307 b |
| **CDC ATHABASCA** | 103 | 74 ab | 5776 de | **86 de** | 66 b | 82 b | 351 a |
| **CDC CANARY** | 111 | 76 ab | 6190 bcd | **92 bcd** | 69 a | 85 a | 284 cd |
| **CDC INCA** | 118 | 81 ab | 6593 abc | **98 abc** | 68 ab | 83 ab | 266 def |
| **CDC LEWOCHKO** | 119 | 86 a | 6652 ab | **99 ab** | 68 ab | 83 ab | 258 ef |
| **CDC SPECTRUM** | 113 | 70 ab | 6296 bcd | **94 bcd** | 67 b | 83 b | 281 cd |
| **CV** | | 9.12 | 3.75 | 3.75 | 0.89 | 0.88 | 2.71 |

Varieties that share a letter did not differ significantly from one another (p>0.05).

| Green Peas | % of Check CDC Limerick | VINE Length (cm) | Yield kg/ha | Yield bu/ac | Bushel wt lb/bu | Tst Wt kg/HL | TKW(g) 1000 Seeds |
|---|---|---|---|---|---|---|---|
| **CDC LIMERICK** | 100 | 79 ab | 5548 b | **82 b** | 67 b | 83 b | 232 d |
| **AAC COMFORT** | 117 | 72 ab | 6472 a | **96 a** | 66 c | 81 c | 287 b |
| **CDC FOREST** | 112 | 70 b | 6182 a | **92 a** | 67 b | 82 b | 290 b |
| **CDC SPRUCE** | 99 | 73 ab | 5483 b | **82 b** | 68 a | 84 a | 305 a |
| **LRP 1424** | 110 | 81 a | 6122 a | **91 a** | 67 b | 83 b | 252 c |
| **CV** | | 5.82 | 4.52 | **4.53** | 0.8 | 0.78 | 2.98 |

Varieties that share a letter did not differ significantly from one another (p>0.05).

| Fababeans | Type | Maturity | % of Check Snowbird | VINE Length (cm) | Yield kg/ha | Yield bu/ac | TKW(g) 1000 Seeds |
|---|---|---|---|---|---|---|---|
| **SNOWBIRD** | Zero Tannin | Early | 100 | 75 b | 6171 bc | **92 bc** | 581 c |
| **DL -TESARO** | Zero Tannin | Medium | 115 | 96 a | 7069 a | **105 a** | 648 b |
| **FABELLE** | Tannin | Medium | 121 | 93 a | 7481 a | **111 a** | 605 c |
| **MALIK** | Tannin | Medium | 94 | 67 b | 5810 c | **86 c** | 768 a |
| **CDC 292-16** | Zero Tannin | Early | 106 | 78 b | 6568 b | **98 b** | 409 d |
| **CV** | | | | 7.66 | 4.29 | **4.3** | 4.29 |

Maturity for our region should be taken into consideration, Tannin varieties have colored flower whereas non-tannin one has a white flower.

**Feb 22, 2018**

# Alberta Wheat commission 2018

# GRO - Local wheat varieties comparison trial"

**Co-operators: Pibroch Colony – SW-16-61-26-W4**

**Summary:** The Gateway Research Organization has been involved in the regional variety trials (RVTs) organized by the government of Alberta and contributed to data sheets for the Alberta seed guide since 1988. However not all locally grown varieties of wheat are included in the RVTs. The producers in our region want to see a close comparison of the newer varieties grown in RVTs program with most popularly grown in our region. This gives growers local results to assist in choosing between varieties.

**Background:** Prior to planting each year, wheat producers had to make an important, and interesting decision of selecting wheat seed varieties from a long list of choices. Since public and private wheat breeders continue to develop higher-yielding wheat varieties over time, wheat producers are confronted with a difficult question about whether to purchase new certified seed or go with older proven choices. As producer run applied research organization, it is mandated for GRO to provide an unbiased source of information regarding decision-making process for each of the wheat variety. If producers can choose from the information suited close to their individual set of growing conditions including average rainfall, soil type, and agronomic practices, they would most likely to maximize performance for selected wheat variety and their profitability,

**Objective:** Side by side Comparison of all the locally popular wheat varieties (about 16-18) in north-central Alberta to analyze yield and other agronomic characteristics.

- Project Design, Methodology and Experimental Approach was similar to RVT trials.
- Standard RVTs protocol was strictly followed for the course of the trial.

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## Varieties to be included in the trial

| Canada Western Red Spring | | | | Canada Prairie Spring Red | |
|---|---|---|---|---|---|
| CDC Abound CL | 1 | AAC Redwater | 7 | 5700PR | 12 |
| AAC Brandon | 2 | CDC Stanley | 8 | AAC Penhold | 13 |
| AAC Connery | 3 | CDC Utmost VB | 9 | AAC Ryley | 14 |
| AAC Elie | 4 | AAC Viewfield | 10 | Canada Northern Hard Red | |
| CDC Landmark VB | 5 | Stettler | 11 | Foremost | 15 |
| AC Muchmore | 6 | | | Canada Soft White | |
| | | | | AC Andrew | 16 |

**The agronomic information for the trial are as follows**:

**AWC Local/Popular wheat variety trail 2018**

Seeded May 16, 2018

Seed depth: 1 inch

Rainfall recorded since April 2018: 247.5 mm

Fertilizer: Seed placed: 11-52-0 48 lbs/ac

25 lbs/ac Actual P

5.3 lbs/ac Actual N

Side banded: 22-0-26-2-.44Cu 226 lbs/ac

N P K S

58.8 lbs/ac Actual K

49.7 lbs/ac Actual N

4.5 lbs/ac Actual S

1 lb/ac Actual Cu

Deep banded N: 82-0-0 Fall applied 82 lbs/ac Actual N

CleanStart May 17, 2018

Curtail M. June 7, 2018

Buctril M + Axial June 19, 2018

Harvest: September 28, 2018

| Treatment | % of Protein Content | Height (cm) | | Yield kg/ha | | Yield bu/ac | | Bushel wt lb/bu | | Tst Wt kg/HL | | TKW(g) 1000 Seeds | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CDC Abound CL** | **13.0** | 88 | bcd | 6544 | a-d | **97** | **a-d** | 61 | abc | 75 | abc | 44 | bc |
| **AAC Brandon** | **12.7** | 87 | bcd | 6302 | a-d | **94** | **a-d** | 61 | abc | 75 | abc | 39 | efg |
| **AAC Connery** | **13.3** | 91 | abc | 6175 | bcd | **92** | **bcd** | 63 | ab | 78 | ab | 41 | de |
| **AAC Elie** | **13.3** | 83 | b-e | 6115 | bcd | **91** | **bcd** | 61 | abc | 75 | abc | 40 | d-g |
| **CDC Landmark VB** | **13.5** | 93 | ab | 6310 | a-d | **94** | **a-d** | 62 | abc | 77 | abc | 40 | d-g |
| **AC Muchmore** | **13.3** | 80 | def | 5737 | d | **85** | **d** | 60 | bc | 74 | bc | 41 | def |
| **AAC Redwater** | **14.0** | 88 | bcd | 5946 | cd | **88** | **cd** | 61 | abc | 75 | abc | 38 | fg |
| **CDC Stanley** | **13.4** | 98 | a | 6318 | a-d | **94** | **a-d** | 63 | ab | 77 | ab | 37 | g |
| **Stettler** | **14.4** | 96 | a | 5283 | d | **79** | **d** | 62 | abc | 77 | ab | 40 | efg |
| **CDC Utmost VB** | **14.1** | 93 | ab | 6418 | a-d | **95** | **a-d** | 61 | abc | 76 | abc | 40 | efg |
| **AAC Viewfield** | **12.9** | 80 | def | 6522 | a-d | **97** | **a-d** | 61 | abc | 75 | abc | 38 | efg |
| **5700PR** | **11.2** | 82 | c-f | 7202 | ab | **107** | **ab** | 60 | bc | 74 | bc | 43 | cd |
| **AAC Penhold** | **11.8** | 74 | f | 6931 | abc | **103** | **abc** | 64 | a | 78 | a | 46 | b |
| **AAC Ryley** | **11.2** | 86 | bcd | 6658 | a-d | **99** | **a-d** | 59 | c | 73 | c | 54 | a |
| **AC Foremost** | **10.9** | 76 | ef | 6710 | a-d | **100** | **a-d** | 61 | abc | 75 | abc | 44 | bc |
| **AC Andrew** | **10.3** | 90 | bc | 7339 | a | **109** | **a** | 61 | abc | 75 | abc | 40 | d-g |
| **CV** | | 4.1 | | 5.68 | | **5.68** | | 1.91 | | 1.91 | | 2.89 | |

Varieties that share a letter did not differ significantly from one another (p>0.05).

# Canola Performance Trial 2018

**Co-operator: Randy Pidsadowski- SW-17-61-26-W4**

**Objectives**: to evaluate currently available commercial canola seed varieties available to farmers. Yield differences should be due to genetic differences only, not due to high weed, disease or insect pressure.

- To compare the agronomic characteristics of new varieties and proven varieties in our localized growing condition.
- To provide information on newer varieties to local producers

**Introduction**: Canola Performance Trials (CPT) are independent trials for Western Canadian canola growers to evaluate (current) commercially available varieties. The funding for these trials comes from Alberta Canola, MCGA and SaskCanola.

The current version of the CPT program dates back to 2011. However, this was the first year for GRO to host site for the trial. The trial includes a total of 27 standard varieties from three herbicide-tolerant systems (Clearfield, Liberty Link and Roundup Ready).

| | **CPT - Project Description** |
|---|---|
| **Seeding Date** | May 25 |
| **Seeding Specifics** | Fabro zero till drill<br>Seeding Depth: ¾ inch<br>**Seeding Rates:**<br>14 plants/square foot |
| | **CPT - Project Description** |
| **Fertilizer/ ac** | **Deep banded:** 17-0-33-3 200 lbs/ac<br>• 46-0-0 217 lbs/ac<br>• 133.8 lbs/ac Actual N<br>• 66 lbs/ac Actual K<br>• 6 lbs/ac Actual S<br>**Seed placed:** 11-52-0 65 lbs/ac<br>• 33.8 lbs/ac Actual P<br>• 7.2 lbs/ac Actual N<br>**:** 150 lbs/ac Sulphur Fines Broadcast |

| | |
|---|---|
| **Herbicide** | • CleanStart May 22, 2018<br>• Poast Ultra June 8, 2018<br>• Roundup (RR entries) June 15, 2018<br>• Liberty (LL entries) June 15, 2018 *reapplied June 19<br>• Solo (CL entries) June 15, 2018 *reapplied June 21<br>• Centurion June 21, 2018<br>*Rain fell after spraying Roundup, Liberty and Solo - June 15. Roundup was fine. Solo and reapplied |
| **Harvest Date** | October 5 |

The trial was -sprayed using R-Tek boom sprayer. Due to the late maturity in crop and early onset of snow in September, dry-down of the trial was very slow causing the late harvest at a higher moisture percentage and issues of a higher percentage of green than desired. Early frost was reason for the higher green in Canola. However, we could have waited for a week to let canola dry itself but it still would have no effect on the greens. Hence we decided to go ahead with harvest. The bagged samples were air dried to 10% moisture before processing for the yield.

## Results:

The results of the CPT trial grown at Westlock are summarized in the table. The average yield in the trial was about 57 bu/ac, with the highest yielding canola variety was L241C at 66 bu/ac (Liberty Link system). The **DL1745CL** at 58 bu/ac and **45CS40** at 63 bu/ac were top yielding varieties in Clearfield and Roundup Ready systems. Interestingly, most of the varieties with clubroot resistant did better than the respective varieties with not rated for Clubroot resistance. Out of curiosity after analyzing yield data, we decided to test soil for the clubroot presence. However, the soil sampling indicated a negative presence to the detectable level of clubroot.

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| | Variety | System | Days To Maturity (60% seed color change) | | Height ' (cm) | | YIELD 'Bu/Acre | |
|---|---|---|---|---|---|---|---|---|
| 1 | **5545CL** | CL entries | 104.8 | ab | 128 | a-e | **45.7** | c |
| 2 | **CS2500CL** | CL entries | 108.0 | a | 129 | a-e | **48.9** | bc |
| 3 | **DL1745CL** | CL entries | 107.3 | a | 127 | a-e | **57.9** | abc |
| 4 | **46H75** | CL entries | 106.5 | ab | 128 | a-e | **50.4** | bc |
| 5 | **PV 200 CL** | CL entries | 106.0 | ab | 123 | a-e | **51.0** | abc |
| 6 | **L252** | LL entries | 105.0 | ab | 113 | e | **52.8** | abc |
| 7 | **L230** | LL entries | 103.5 | b | 117 | de | **55.6** | abc |
| 8 | **L241C** | LL entries | 105.8 | ab | 120 | cde | **66.2** | a |
| 9 | **6090 RR** | RR entries | 105.3 | ab | 145 | a | **62.5** | ab |
| 10 | **6076 CR** | RR entries | 107.3 | a | 140 | abc | **61.5** | ab |
| 11 | **6074 RR** | RR entries | 105.0 | ab | 124 | a-e | **57.4** | abc |
| 12 | **CS2300** | RR entries | 105.8 | ab | 134 | a-e | **60.6** | abc |
| 13 | **CS2000** | RR entries | 105.0 | ab | 137 | a-d | **58.4** | abc |
| 14 | **CS2100** | RR entries | 106.5 | ab | 124 | a-e | **53.0** | abc |
| 15 | **16RH5088** | RR entries | 108.0 | a | 139 | a-d | **59.5** | abc |
| 16 | **V14-1** | RR entries | 106.5 | ab | 129 | a-e | **59.1** | abc |
| 17 | **V12-3** | RR entries | 104.5 | ab | 122 | b-e | **52.3** | abc |
| 18 | **75-65 RR** | RR entries | 104.5 | ab | 123 | a-e | **52.5** | abc |
| 19 | **74-44 BL** | RR entries | 104.5 | ab | 132 | a-e | **57.4** | abc |
| 20 | **75-42 CR** | RR entries | 103.5 | b | 128 | a-e | **56.2** | abc |
| 21 | **DL1634RR** | RR entries | 106.5 | ab | 138 | a-d | **63.0** | ab |
| 22 | **45H33** | RR entries | 104.5 | ab | 136 | a-d | **58.1** | abc |
| 23 | **45M35** | RR entries | 105.8 | ab | 124 | a-e | **57.9** | abc |
| 24 | **45CS40** | RR entries | 106.0 | ab | 143 | ab | **63.0** | ab |
| 25 | **D3155C** | RR entries | 105.0 | ab | 136 | a-d | **61.2** | ab |
| 26 | **540 G** | RR entries | 105.8 | ab | 128 | a-e | **58.1** | abc |
| 27 | **581 GC** | RR entries | 105.3 | ab | 139 | a-d | **56.6** | ab |

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls)

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# Ultimate Canola Challenge Field scale trial

**Co-operators: John Guelly Location: NW 35-58-27-W4**

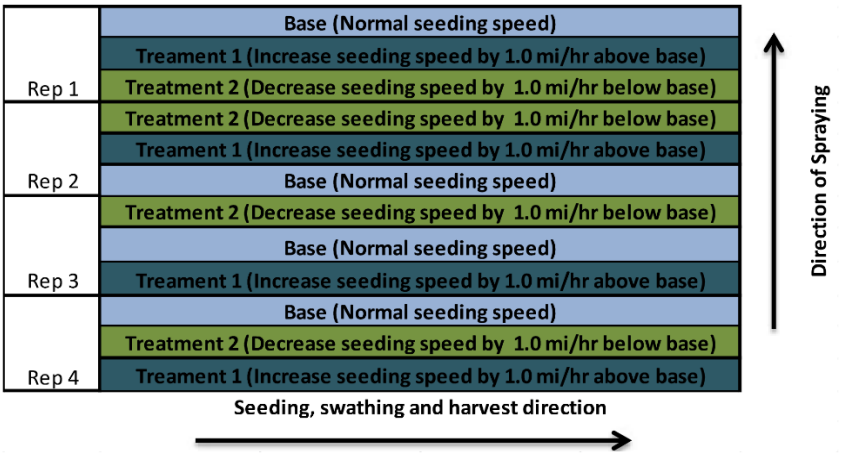
## Objectives:

- Educating farmers on the most effective way to carry out on-farm trials, while collecting data from these trials to share with the canola industry.
- Identifying how increasing and decreasing seeding speed will affect crop emergence, plant count, maturity and yield.

The agronomic details for the trials were as shown in table:

| | |
|---|---|
| **Seeding Date** | May 14, 2018 |
| **Canola Variety Planted** | L241C |
| **Seeding Depth** | 3/4" |
| **Target Plant Density** | 7 |
| **Thousand Seed Weight** | 4.77 |
| **Seeding Rate (lbs/ac)** | 4.7 |
| **Seed Drill Type:** | JD1830 w/1910 tank |
| **Drill Width (ft)** | 33.3 Row Width (in) 10 |
| **Swath Date** | September 22, 2018 |
| **Swath Width (ft)** | 29.8 |
| **Harvest Date** | October 3, 2018 |

The trial was seeded with following a randomized layout as drawn bellow: The plot for each treatment were 650 feet long and width of seeder.




**Base** = Normal Seeding Speed

**Treatment 1**= Increasing seeding speed by 1.0 mi/hr above base

**Treatment 2** = Decreasing seeding speed by 1.0 mi/hr below base

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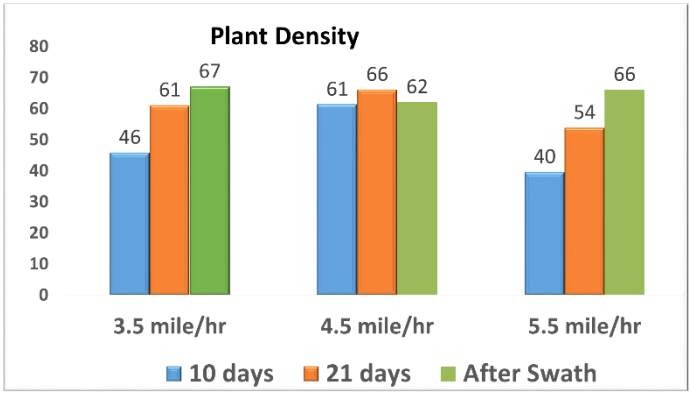
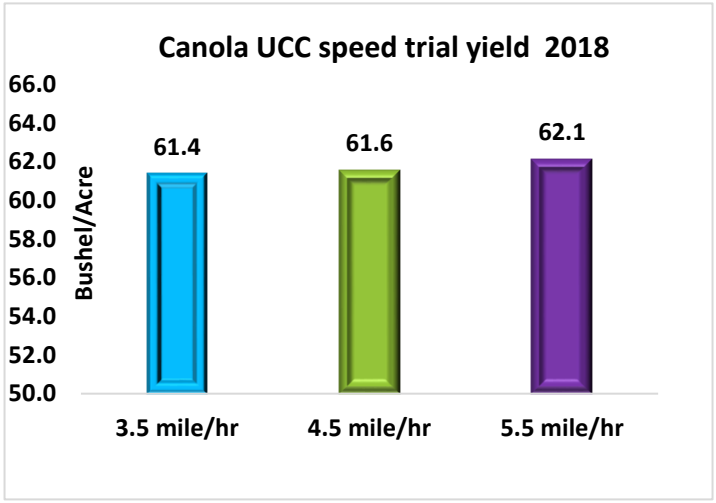
Data for the plant counts, were collected at 7, 21 and after swath to access the emergence and the plant density at the different crop growth stage.

**Results:**

The results from plant count at 7 days indicated that there was an uneven emergence with either increasing or decreasing the seeding speed. However, the difference in the plant density was narrowed at 21 days count. The stubble count showed no difference in the plant density for the canola.




The yield was measured using the weight wagon. There was no statistical difference for yields between seeding speeds treatments. The yield for all three seeding speed was recorded at ±0.5 of the overall average of 61.7 bu/acre.




**Acknowledgment:** Many thanks to and our producer partner John Guelly for their support during this trial.

# Alternative Crop Demonstration Plots

**Co-operators: Jubilee Feedlot- SW-16-61-26-W4**

## Objectives:

- To promote crop diversification and increase economic viable options for the crop rotation for farmers in our area
- An alternative field crop is an agronomic crop not usually grown in our area and usually targeted due to potential high sale value or specialized niche market benefit.

## Introduction:

This season GRO seeded a number of crops not normally grown in the region to assess viability. Crops included in the demonstration where: Soybean, Lentil, Camelina and Canary Seed. Next year we plan to include Quinoa and Caraway Seed in the demonstration.

## Soybean

Much like corn, soybean breeders are working hard to develop shorter season varieties that can be economically viable in our region. Crops yielding in the 30 to 40 bushel range have been reported in our area along with total wrecks. The challenges are, of course, late season maturity, yield and quality. GRO experienced a total wreck brought on by a severe hailstorm on July 20. This storm shredded the soybean which at the time was in flower. The crop made an aggressive recovery but delayed an already late maturing crop by at least two to three weeks. The early frost on September 12 sealed its fate. In the end we combined the plots with 5 varieties yielding under 10 bu/ac. One variety managed 18 bu/ac but all samples were very poor quality. Better luck next year.

Thanks to **Nutrien Barrhead** and **Pioneer** for providing seed for the trial.

## Lentil

The story for our Lentil plots goes much the same as for the soybean as the trials were side by side. The Lentil is also a long season crop for our region that has the same challenges as soybean regarding maturity issues, yield and quality. Breeders however continue to work on earlier

varieties. The crop is successfully grown in many regions in central Saskatchewan and Alberta so varieties that can work in our area available. GRO grew 9 varieties in our demo trial. The plots suffered the same fate as the soybean with the severe hailstorm and early frost event. While some of our yields were OK, the quality was so poor no reportable data can be obtained from the trial. Again, better luck next year.

Thanks to **Trent Whiting of Secan** for sourcing the Lentil seed for us.

## Canary Seed

Canary Seed is a cereal crop well suited to our growing conditions. Gro has planted Canary Seed for the past two years with good results. We grew two varieties; Calvi and Cibo provided to us by Canterra. Canary Seed is normally grown under contract for the bird seed industry but markets for human consumption are developing as a replacement for sesame seed among other uses. High protein, gluten free and high oil content are important points in its favour. The challenges for the crop in our area are no easily accessible markets or delivery points. Sask. 2018 prices ranged from $385/t to $455/t.

GRO yield:

Calvi 2.345 t/ha @ $455/t = $1066.97/ ha or $431.97/ac

Cibo 2.293 t/ha @ $455/t = $1043.31/ha or $422.39/ac

Thanks to **Colette Prefontaine of Canterra seeds** for sourcing the Canary seed for us.

## Camelina

Camelina is an oilseed crop in the Brassica family. The market for the product in North America is primarily industrial. Jet fuel as an example. At this point the crop is grown under contract only. The crop has potential in the feed and human consumption market due to its high Omega-3 and Omega-6 fatty acid content. The only factor against human use is an erucic acid content up to 4%. The crop is grown as conventional Canola is grown. I used Edge pre-emergent herbicide.

Registered in crop broadleaf herbicide options are non-existant. I used Poast for grassy weeds and the Camelina was unaffected. I wanted to try Lontrel on the Thistle but chickened out. Maybe next year. Camelina is short season (85-100 days) and is drought and frost tolerant. The crop likes well drained soils and performs better than Canola under hot and dry conditions. The crop germinates well in cold soils so success depends on early establishment to outcompete annual weeds. While the crop is resistant to Blackleg, unfortunately, it is highly susceptible to Clubroot. Yields range from 1500 to over 3000 kg/ha.

GRO yield: 2666.84 kg/ha @ $400/t = $1066.74/ha or $431.88/ac

Note: all these plots were hand weeded and whenever they needed it.

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## Alberta Wheat Commission Fertility Trial

**Co-operator: Pibroch Colony Location: SW-16-61-26-W4**

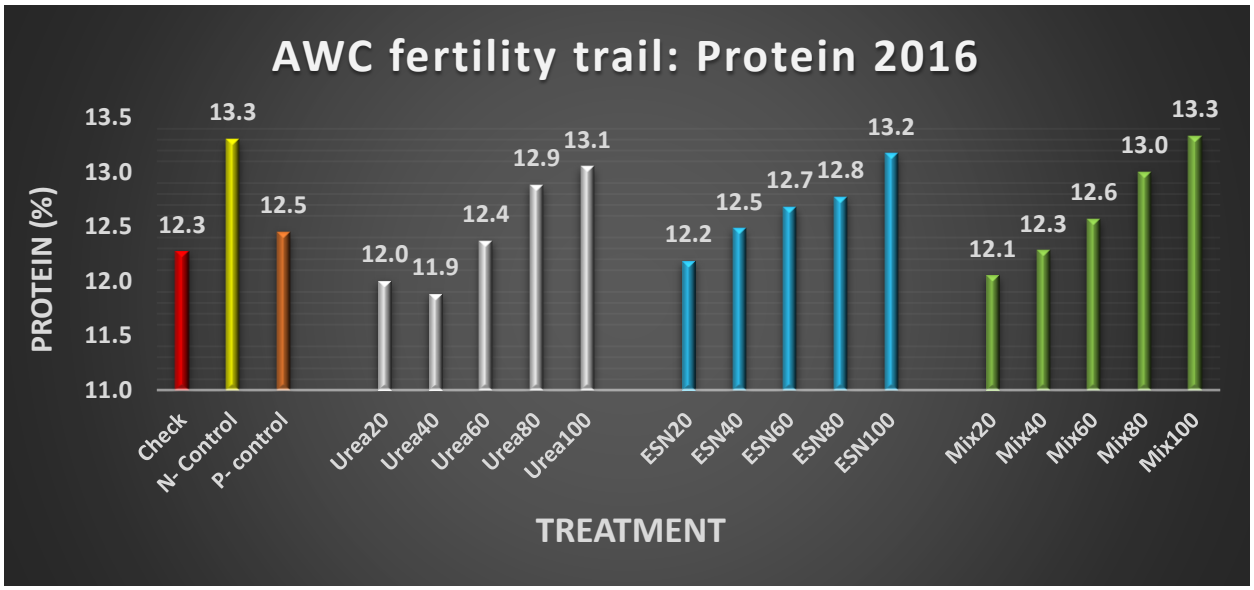
### GRO Trial for Optimizing Nitrogen Application Rate for Wheat in Our Area

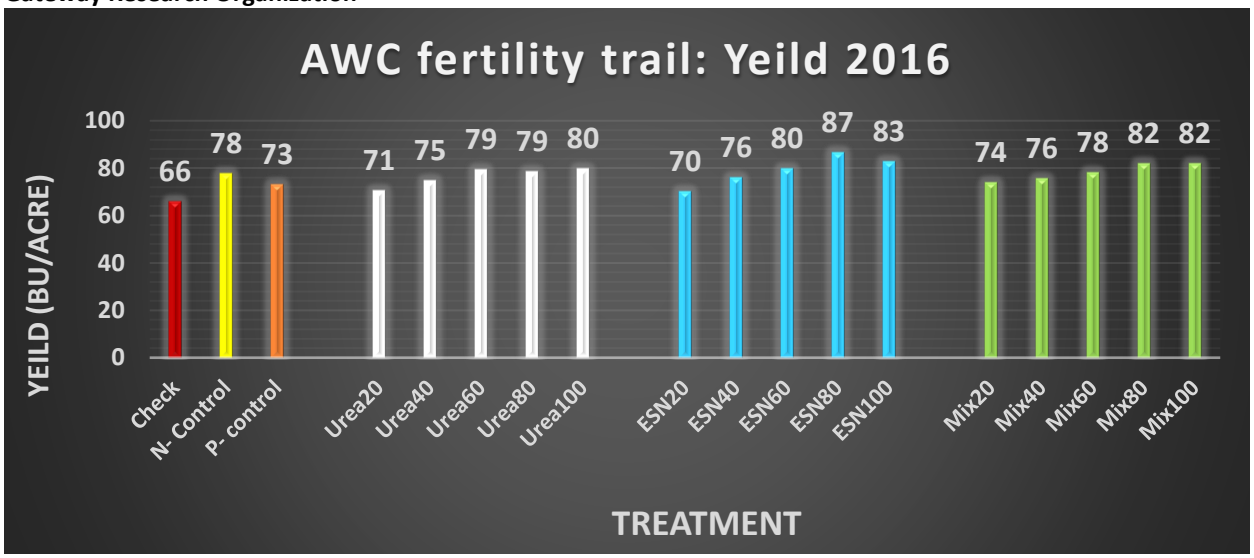
**Objectives**:

- To educate producers for effective use of fertilizer and that can, in turn, reflects to optimize the input cost and increases profitability for the producers.
- The optimization in fertilizers use will also be beneficial for the sustainability of the land and reducing the environmental footprints due to a reduction in leaching of excessive fertilizers to the environment.

**Background**: Nitrogen recommendations for major crops using different rates of Urea and ESN alone as compared to a mix of Urea with ESN are not yet developed for different regions of Alberta. The results from current research will provide optimum knowledge for the application of nitrogen fertilizer rates and will provide an economic benefit to growers. Based on literature references, it was speculated that Spring Wheat yield, quality, and economics differ significantly by applying different N application rates from urea, and ESN. The integrated use of slow-release nitrogen fertilizers (ex. ESN) along with readily available nitrogen fertilizers (ex. urea) would be able to meet the quick initial (urea) and later (ESN) nutrient demand during the growing season to meet the nutrient uptake pattern of crops. This would also reduce environmental nitrogen loss and may increase return on fertilizer investment (Haben et al 2014). Variation of agronomic management practices such as fertilizer application rates has a significant influence on grain yield and grain quality in term of wheat protein percentage (Campbell et al., 1977). The efficiency of using urea, ESN or their mix will facilitate the need for N fertilizer only when a crop response is expected and thereby can increase the profitability (Mullen et al., 2003). Grain protein concentration is an important quality measure which is essential for the nutritional value and end-use rheological characteristics of the bread making process (Johansson et al., 2001). The amount of nitrogen affects the wheat protein and can account for variability of up to 35% for the total protein content at a lower temperature condition (Malik et al., 2013).

With support from AWC, we had successfully conducted this trial in 2016 and 2017. Our preliminary data analysis showed a visible difference in fertilizer rates and types of fertilizer on yields as well as protein content of wheat. Based on year one data, the protein % was higher in grain with treatment received a higher rate of fertilizer and was significantly higher in wheat from 80 lbs or above of Urea-ESN mix compared to control. In short, form two-year data we can conclude that 60 lbs of Urea-ESN mix had shown higher yield than if used at the same rate of 60 lbs of UREA or ESN. However, at a higher rate of inclusions of 80 lbs of UREA or ESN alone or used in the mix had no difference for the yield advantage. That being said, as environment and disease conditions can fluctuate greatly from year to year, so it is important to consider results averaged over multiple years for a more logical conclusion.






We hope with more data available, we would able to speculate for best-suited management regime for the urea, as well as ESN or their mix combination specific to our region.

**Methodology and Experimental Approach:**

RCBD (Randomized Complete Block Design) arranged as split plot, with 6 replications. Three Nitrogen fertilizer regimes (Urea, ESN and Urea plus ESN) and, five rates of N (20, 40, 60, 80, and 100 pounds N/acre (side band) + C2 (with Seed) was combined in factorial and their influence on grain yield and grain quality components was determined.

**Treatments:** Fertilizer packets for individual plots was weighed for accurate application rate through the second cone on seeder.

Three controls were used:

a) No-Fertilizer (check)

b) MAP (Mono-ammonium phosphate) @ 25 lbs P2O5/acre with seed (C2)

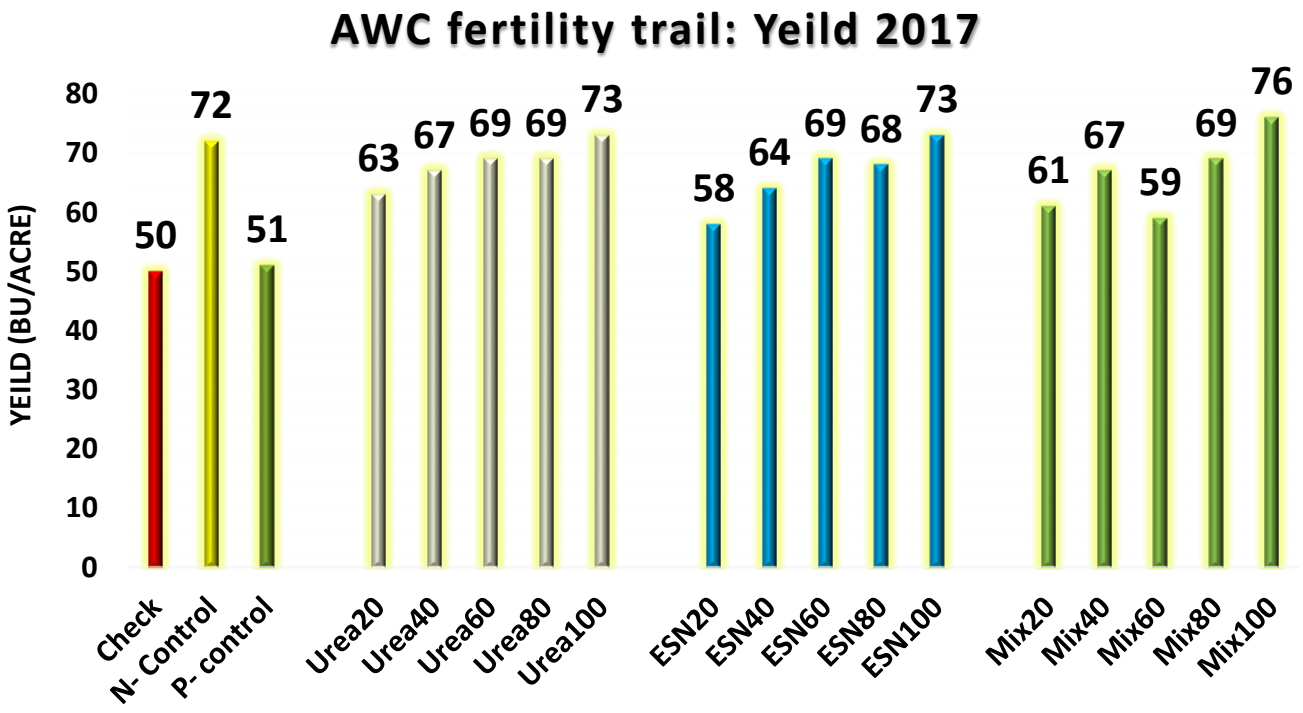
c) Required N/acre (After soil test + needed Fertilizer = as suggested lbs N/acre)

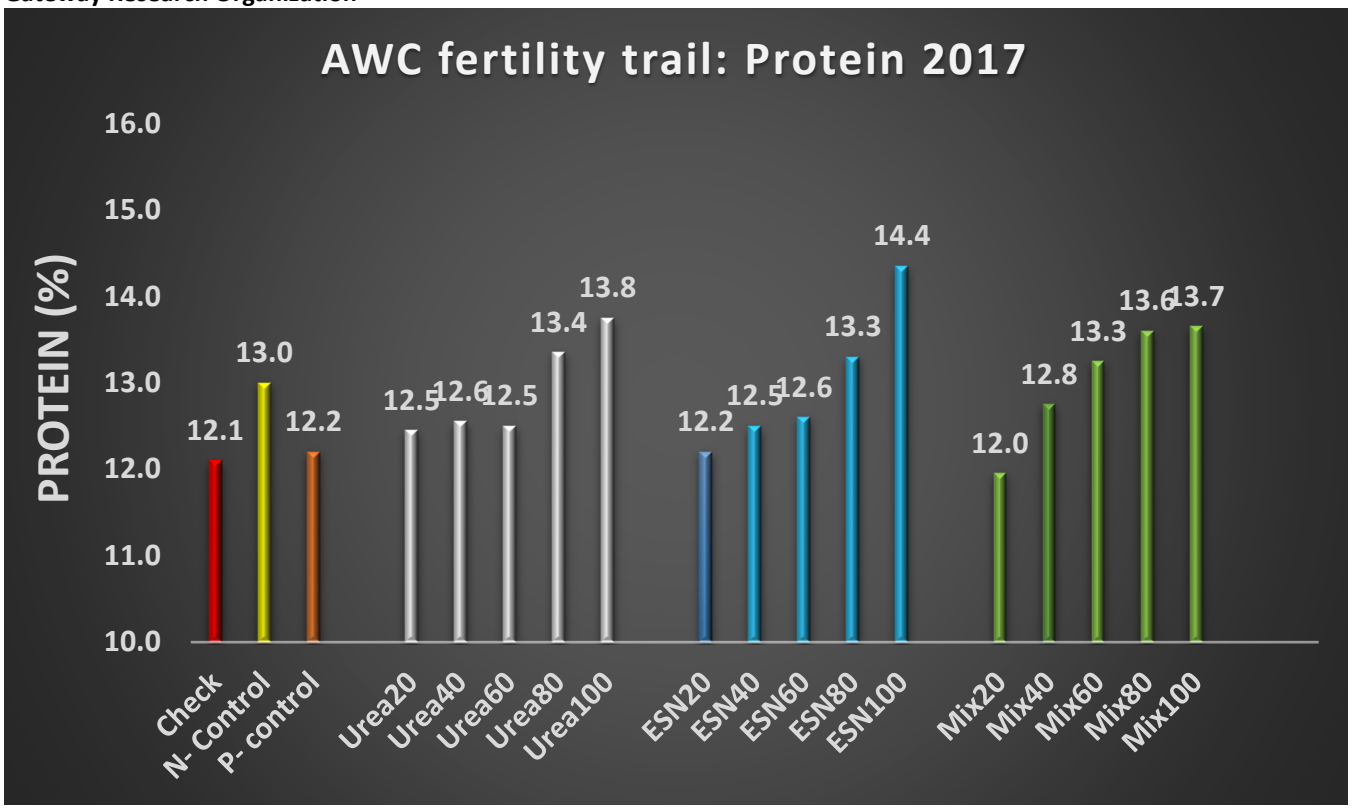
Three Nitrogen fertilizer regimes (Urea, ESN, and Urea plus ESN) and, five rates of N (20, 40, 60, 80, and 100 pounds N/acre (side band) so a total of 15 treatments were randomized with 6 replications. Here is treatment plan chart:

| | | | | | |
|---|---|---|---|---|---|
| No fertilizer Control | C1 | Phosphorus only Control | C2 | 80 pounds N/acre (soil test + Fertilizer = 80 lbs N/acre) | C3 |
| Trt Urea 20lb N/acre | U1 | Trt ESN 20lb N/Acre | E1 | Trt Urea + ESN 20lb N urea | M1 |
| Trt Urea 40lb N/acre | U2 | Trt ESN 40lb N/Acre | E2 | Trt Urea + ESN 40lb N urea | M2 |
| Trt Urea 60lb N/acre | U3 | Trt ESN 60lb N/Acre | E3 | Trt Urea + ESN 60lb N urea | M3 |
| Trt Urea 80lb N/acre | U4 | Trt ESN 80lb N/Acre | E4 | Trt Urea + ESN 80lb N urea | M4 |
| Trt Urea 100lb N/acre | U5 | Trt ESN 100lb N/Acre | E5 | Trt Urea + ESN 100lb N urea | M5 |

Hard Red Spring Wheat (Variety – Plentiful) seeded after Canola. Variety Plentiful is selected because it has very good resistance to lodging, and moderately resistant to stripe rust and fusarium head blight (Alberta Seed Guide - spring 2015). For Grain Quality (Protein), a composite sample about 500-gram cleaned for protein analysis were sent to the Westlock elevator.

**Results:**






The yields was marginally lower for 2017 compared to 2016 for respective treatment. However, the trend for increased yield with increment in fertilizer was observed again in 2017 in UREA, ESN or Urea-ESN mix treatments. Unlike 2016, the 100 lbs rate treatment in UREA, ESN or Mix was higher compared to lower rates as well as N-Control. One factor that may be important to note here is that we had very high precipitation rate during the consecutive two growing seasons 2016 and 2017. The soil nitrogen due to higher moisture might be readily available to uptake for the plant but because the growing season temperature was lower for 2017 compared to 2016, we speculate that might be the reason for a marginally lower yield in 2017.

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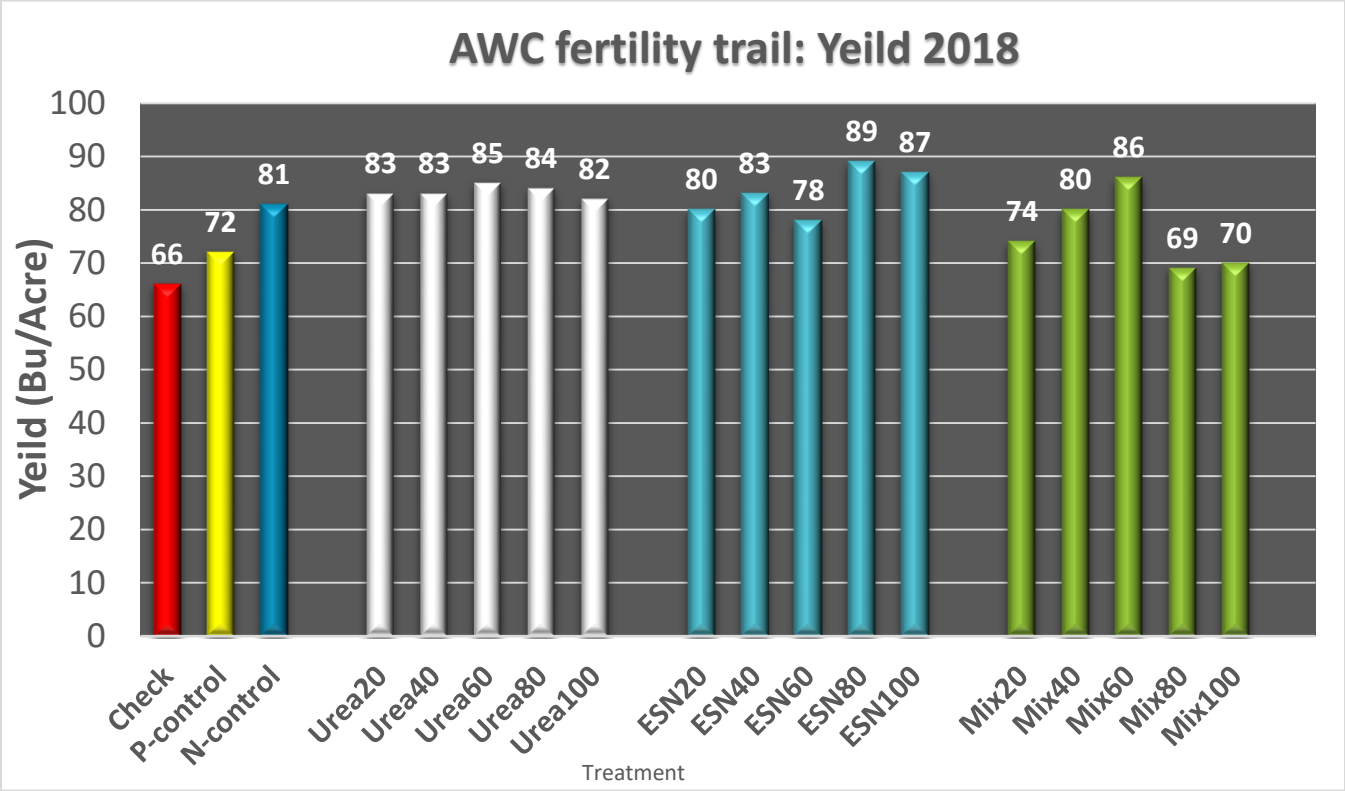
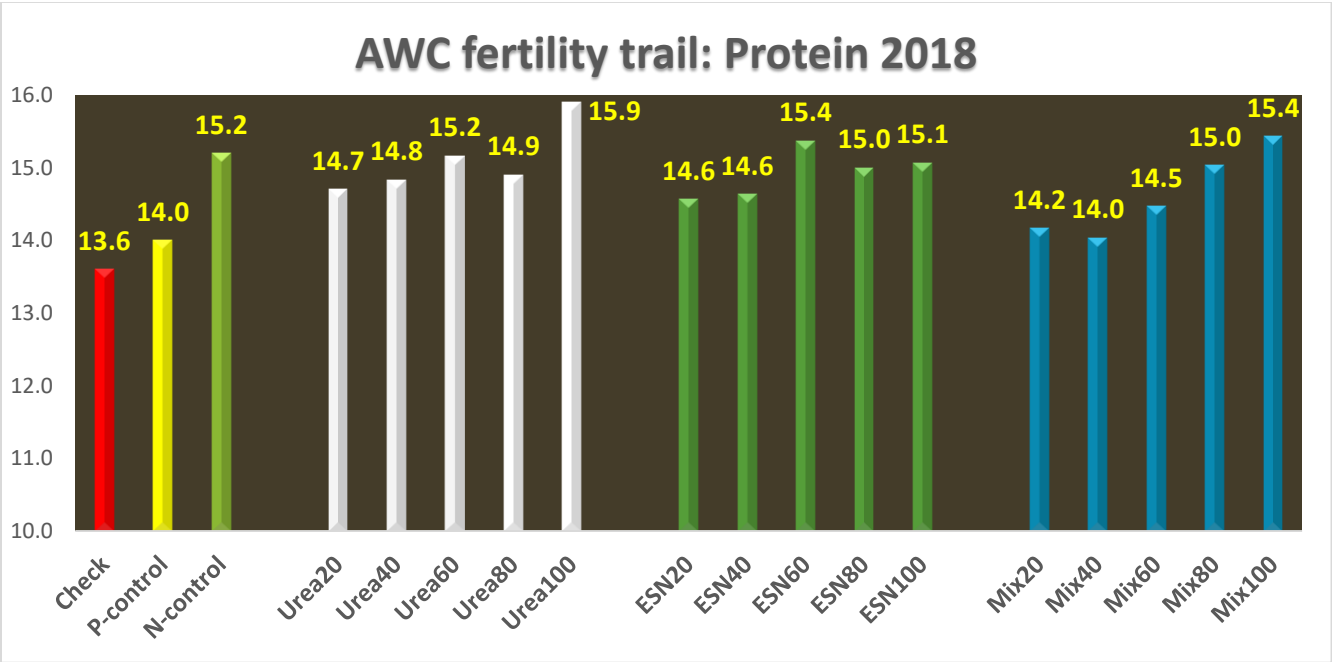
**Results for the year 2018 are as follows**

| Treatment | Protein % | | Height (cm) | | Yield kg/ha | | Yield bu/ac | | Bushel wt lb/bu | | Tst Wt kg/HL | | TKW(g) 1000 Seeds | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Check No fertilizer** | 13.6 | b | 78 | * | 4428 | b | **66** | **c** | 63 | * | 77 | * | 34 | b |
| **P- Control** | 14.0 | ab | 76 | * | 4775 | ab | **72** | **abc** | 63 | * | 78 | * | 36 | ab |
| **N- Control** | 15.2 | ab | 73 | * | 5365 | ab | **81** | **abc** | 62 | * | 77 | * | 37 | a |
| **Urea 20 lbs** | 14.7 | ab | 91 | * | 5543 | ab | **83** | **abc** | 62 | * | 76 | * | 37 | a |
| **Urea 40 lbs** | 14.8 | ab | 79 | * | 5553 | ab | **83** | **abc** | 63 | * | 78 | * | 36 | ab |
| **Urea 60 lbs** | 15.2 | ab | 85 | * | 5677 | ab | **85** | **abc** | 62 | * | 77 | * | 37 | a |
| **Urea 80 lbs** | 14.9 | | 88 | * | 5633 | ab | **84** | **abc** | 62 | * | 76 | * | 37 | a |
| **Urea 100 lbs** | 15.9 | a | 91 | * | 5489 | ab | **82** | **abc** | 64 | * | 78 | * | 37 | a |
| **ESN 20 lbs** | 14.6 | ab | 88 | * | 5344 | ab | **80** | **abc** | 62 | * | 76 | * | 37 | a |
| **ESN 40 lbs** | 14.6 | ab | 84 | * | 5093 | ab | **83** | **abc** | 64 | * | 79 | * | 36 | a |
| **ESN 60 lbs** | 15.4 | ab | 79 | * | 5203 | ab | **78** | **abc** | 63 | * | 78 | * | 37 | a |
| **ESN 80 lbs** | 15.0 | ab | 87 | * | 5924 | a | **89** | **a** | 62 | * | 76 | * | 37 | a |
| **ESN 100 lbs** | 15.1 | ab | 84 | * | 5806 | a | **87** | **ab** | 63 | * | 78 | * | 37 | a |
| **Urea ESN Mix 20 lbs** | 14.2 | ab | 75 | * | 4919 | ab | **74** | **abc** | 62 | * | 77 | * | 35 | ab |
| **Urea ESN Mix 40 lbs** | 14.0 | ab | 81 | * | 5337 | ab | **80** | **abc** | 62 | * | 77 | * | 36 | ab |
| **Urea ESN Mix 60 lbs** | 14.5 | ab | 86 | * | 5718 | ab | **86** | **ab** | 63 | * | 77 | * | 37 | a |
| **Urea ESN Mix 80 lbs** | 15.0 | ab | 82 | * | 4604 | ab | **69** | **bc** | 61 | | 76 | | 37 | a |
| **Urea ESN Mix 100 lbs** | 15.4 | ab | 74 | * | 4660 | ab | **70** | **bc** | 63 | * | 78 | * | 37 | a |
| **CV** | 4.5 | | 10.6 | | 12.2 | | 9.9 | | 3.0 | | 3.0 | | 3.6 | |

Means followed by same letter or symbol do not significantly differ (P=0.05).




We noticed a higher protein content in wheat throughout all treatments in 2018. The protein content in wheat was noticed for 100 lb of Urea treatment. The producer partner had fall-applied nitrogen to the whole field but our soil test indicated almost no residual nitrogen. In 2018, we didn't notice the

effect of the increasing rate of fertilizer for the yield advantage. Increasing urea from 20 lbs/acre to even 100 lbs/acre didn't have any increase in yield however the protein content showed a linearly increasing trend as noticed in previous years too. The increasing rate of ESN from 20 to 100 lbs/acre had a trend of increasing yield as well as protein. The ESN inclusion at the rate of 80 lbs/acre or higher had significantly higher yield advantage compared to no fertilizer control. The Urea-ESN mix also showed a linear increase in yield as well as protein content in wheat up to 60 lbs/acre of inclusion.

**Conclusion:** The protein content in wheat responds linearly to the increasing rates of nitrogen fertilizer. However, it does not show the same linear trend for the higher yield advantages. The environmental condition plays a bigger role in maximizing the nitrogen uptake efficiency.

**Acknowledgments:** We would like to thank Alberta Wheat Commission (AWC) for their financial assistance for this trial.

# POGA Milling Oats Trial

**Co-operator: Pibroch Colony  Location: SW-16-61-26-W4**

**Increase the Oat Acres in Alberta by Finding a High Yielding Oat Variety that maximizes Producer Income and Meets the Demands of the Millers.**

**"Year Three 2018"**

This study is a continuous effort to collect data on 11 milling variety oats and 4 feed oat varieties in Central and Northern Alberta. The goal was to determine how variety and growing location will influence the yield and functional property attributes linked to beta-glucan levels of the oats. There were noticeable varietal differences between the two locations for the yields as well as beta-glucan content. 2018 was the third year for collecting the data for the trial. In 2018 the average yield was higher for peace location compared to Westlock location but the beta-glucan content and test weight were higher for the Westlock site.

## Background

Oat production in Alberta has been on a relatively steady decline since 2011. Oats has earned the status of major Canadian export crop from a domestic crop status. According to Prairie Oat Grower's Association (POGA), an estimate of 3.1 million acres of oat was seeded in the year 2015-16 but there is a decline in Alberta due to lack of markets and non-competitive pricing with other crops. Many major millers will not accept oats from Alberta or look to Alberta only after Manitoba and Saskatchewan's supply is gone, because the main two oat varieties grown in Alberta, Morgan, and Derby contain low amounts of Beta Glucan (β-glucan). A minimum of 4% β-glucan is required for companies to be able to label their products with the Heart Healthy Claim and both Morgan and Derby are consistently below that amount. Therefore, oat producers in Alberta need an oat variety that can consistently beat the yields of Morgan and Derby but has the higher β-glucan amounts that the oat miller desire. To emphasize this fact, since 2015 two millers are helping to fund this variety trial to get it started before outside funding can be located to make oats in Alberta more competitive.

Oats are a valuable part of crop rotation and are therefore beneficial to producers. They provide disease and insect breaks for wheat, barley, and canola. Their rapid establishment and growth provide excellent weed suppression. Oats also work well as a "catch crop" for taking up and storing excess

nitrogen, and the straw provides a nutrient source for the following year's crop. The straw also protects against soil erosion and contributes to an increase in the soils organic matter content (Campbell et al., 1991). Well-Planned management and appropriate selection of variety make oats a profitable crop due to their low input requirements and favorable effects on succeeding crops in a rotation.

Test weight is the most commonly used indicator of grain quality. High test-weight varieties should be chosen by growers who intend to market oat grain. However, the functional attribute such as β-glucan solubility and viscosity are the main criteria for the processing industry. Many studies have shown that oat β-glucan can lower blood cholesterol levels, glucose, and insulin response and therefore decrease the risk of cardiovascular diseases and prevention of diabetes (Wang and Ellis, 2014).

Oats are regularly affected by crown rust in other parts of Western Canada but this issue is moving west, towards Alberta. Neither Morgan or Derby varieties have crown rust resistance but selecting a new disease resistant varieties can overcome the problem. The information for a producer to choose the newer and higher yielding varieties specific to their region is therefore a very important step to stay profitable in the oat production. The β-glucan content in oat may vary with a change in growing conditions (Perez Herrera et al., 2016). The current trial will provide valuable agronomic information for the producers in Alberta to grow oat varieties with higher yield and increased functional properties (β-glucan) attribute.

## Objective

- To investigate the impact of genotype and growing condition on the yield and β-glucan content of milling oat varieties in Alberta.

## Methodology

Eleven milling oat varieties and four forage oat varieties were tested in 2016 (Table 1). Based on the soil fertility recommendations, fertilizers were added to maintain the optimal levels of growing condition. Seeding rates were calculated based on 1000 kernel weight of each variety with a Seed Counter, desired plant density and germination percentage. A 9-inch spaced 6 rows Fabro small plot seeder was used for the seeding. Each plot of a variety occupied 10.96 sq. m. (1.37 m width and 8 m long) and there were three replications. The trial site was maintained weed-free with use of herbicides

or hand weeding method (Table 1). The trial was harvested with a Wintersteiger Nursery Mate Elite combine (5-foot header) and grain yield from each plot was measured using Electronic Scales at the site. A clean composite sample (500 g) was collected and sent to laboratory analysis for the β-glucan estimation. The growing season of 2018 was little drier compared to 2016 and 2017.

**Table 1: Agronomic details for the POGA Trial 2018**

| Location: | Peace region | Westlock |
|---|---|---|
| Seeding Date: | May 24th, 2018 | May 18th, 2018 |
| Harvest Date: | Sept 25th, 2018 | Sept 27th, 2018 |
| Soil Temp: | 16.9 Celsius | 10.4 Celsius |
| Soil Moisture: | adequate | Very good |
| Seeding Depth: | 1.5 inch | ¾ inch |
| Fertility total Nutrients Lbs/acre | **107N-30P2O5-25K2O-25S** | **107N- 25P2O5- 84K20- 8S** |
| Herbicides applied to the trial | Pre-burn Transorb 0.5L/Ac and Express pro 7 gm/Ac on May 22 | Pre-burn Roundup 1L/Ac on May 17 |
| Herbicides applied to trial | In crop Broad leaf: stellar A (400 ml/ Acre) + stellar B (240 ml/ Acre) on 21 June | In crop Broad leaf: Curtail M (600 ml/ Acre) on 7 June and Buctril M (400 ml/ Acre) on 19 June |
| Fungicides applied to the trial | none | none |
| Rainfall (mm) | 311 | 247.5 |
| Comment: | Snow fall in September first week | Snow fall in September first week |

## Results and Discussion

At Westlock site, there was no statistical difference between the yields obtained for 11 milling varieties, except OT 3087 had higher yield compared to CDC Ruffian. The AC Arborg and Triactor had a higher yield than AC Morgan at Westlock.

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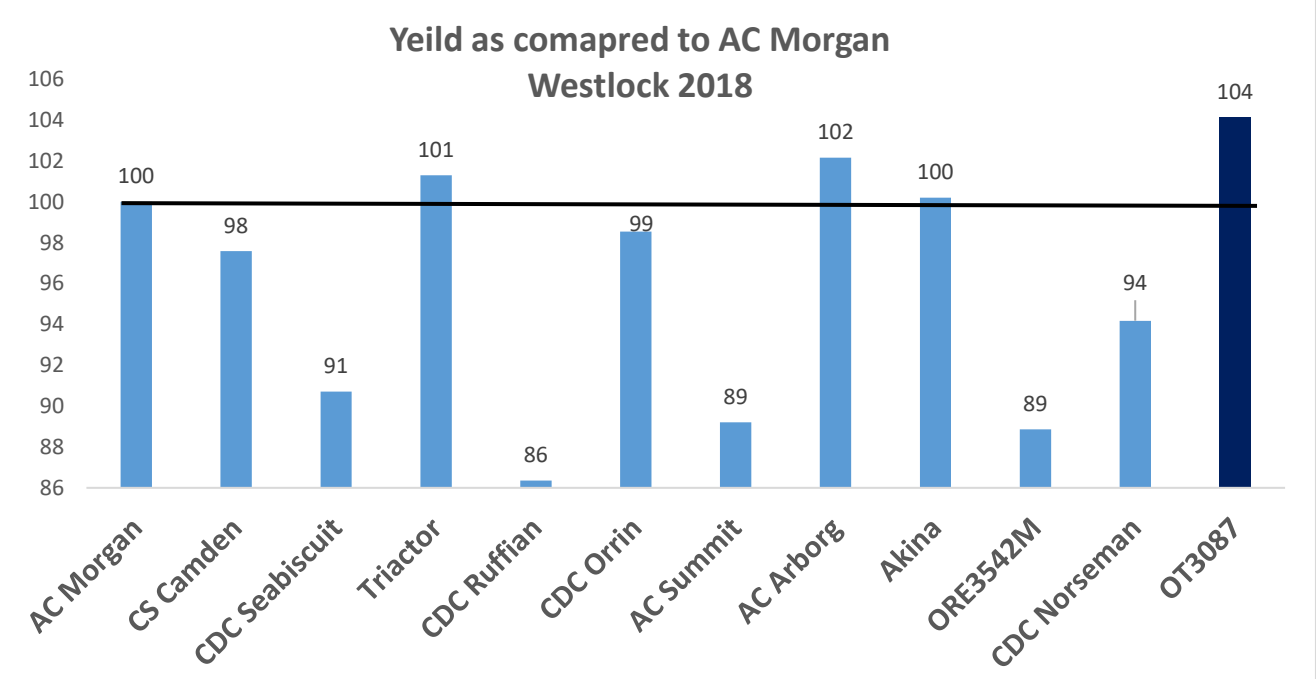
Test weight is an important indicator of grain milling quality. OT3087 and AC Morgan were among the top two for test weight at Westlock.

**Table.2: POGA OAT trial 2018 (Westlock Region Site: Yield Data)**

| Variety | HEIGHT | Yield | Yield | Test weight | 1000 Kernel |
|---|---|---|---|---|---|
| | cm | t/ha | Bu/ac | Kg/Hl | Weight (g) |
| **AC Morgan** | 107 ab | 7.12 ab | **199** ab | 53 a | 46.6 |
| **CS Camden** | 105 ab | 6.94 ab | **195** ab | 52 ab | 46.3 |
| **CDC Seabiscuit** | 106 ab | 6.52 ab | **181** ab | 49 b | 47.0 |
| **Triactor** | 102 ab | 7.20 ab | **202** ab | 49 b | 46.0 |
| **CDC Ruffian** | 95 b | 6.16 b | **172** b | 52 ab | 44.3 |
| **CDC Orrin** | 105 ab | 7.05 ab | **196** ab | 50 ab | 43.4 |
| **AC Summit** | 93 b | 6.41 ab | **178** ab | 51 ab | 44.1 |
| **AC Arborg** | 111 a | 7.26 ab | **204** ab | 52 ab | 45.8 |
| **Akina** | 100 ab | 7.10 ab | **200** ab | 49 b | 45.9 |
| **ORE3542M** | 99 ab | 6.35 ab | **177** ab | 50 ab | 44.6 |
| **CDC Norseman** | 113 a | 6.69 ab | **188** ab | 49 b | 44.4 |
| **OT3087** | 111 a | 7.42 a | **208** a | 53 a | 45.8 |
| **Standard Deviation** | **6.3** | **0.509** | **14.2** | **1.0** | **2.7** |
| **CV** | **6.0** | **7.4** | **7.4** | **2.0** | **6.0** |

*Varieties that share a letter did not differ significantly from one another (p>0.05).

*Yields reported are on a 32 lb/bushel basis with moisture adjustments at 14%.




At Peace region, in previous two years, CDC Ruffian was higher milling oat type than most of the other varieties. However, this year Morgan has out yield CDC ruffian and most other oat varieties. Although Triactor was highest yielding oat variety at peace region for 2018. See the table for the detailed results for 2018.

**Table.3: POGA OAT trial 2018 (Peace Region Site: Yield Data)**

| Variety | HEIGHT | | Yield | | Yield | | Test weight | | 1000 Kernel |
|---|---|---|---|---|---|---|---|---|---|
| | cm | | t/ha | | bu/ac | | Kg/Hl | | Weight (g) |
| **AC Morgan** | 113 | a | 9.05 | a | **252** | a | 49 | a | 34.3 |
| **Akina** | 103 | c | 8.69 | ab | **242** | ab | 47 | b | 33.0 |
| **AC Arborg** | 112 | a | 8.49 | ab | **237** | ab | 49 | a | 34.6 |
| **CS Camden** | 106 | bc | 7.79 | b | **217** | b | 47 | b | 31.0 |
| **CDC Norseman** | 112 | a | 8.54 | ab | **238** | ab | 47 | bc | 32.2 |
| **ORE3542M** | 103 | c | 8.09 | ab | **225** | ab | 48 | b | 34.7 |
| **OT3087** | 112 | a | 8.71 | ab | **243** | ab | 49 | a | 33.4 |
| **CDC Orrin** | 110 | ab | 8.59 | ab | **239** | ab | 50 | a | 34.5 |
| **CDC Ruffian** | 106 | bc | 8.65 | ab | **241** | ab | 47 | b | 34.7 |
| **CDC Seabiscuit** | 114 | a | 8.68 | ab | **242** | ab | 45 | bc | 30.7 |
| **AC Summit** | 97 | d | 8.20 | ab | **228** | ab | 49 | a | 32.6 |
| **Triactor** | 112 | a | 9.20 | a | **256** | a | 46 | c | 31.8 |
| **Standard Deviation** | 2.9 | | 0.476 | | 13.3 | | 0.6 | | 3.0 |

| | | | | | |
|---|---|---|---|---|---|
| **CV** | 2.7 | 5.6 | 5.6 | 1.2 | 9.0 |

*Varieties that share a letter did not differ significantly from one another (p>0.05).

*Yields reported are on a 32 lb/bushel basis with moisture adjustments at 14%.

## Oat grain dehulling and beta glucan estimation.

The oat seeds were dehulled with an impact huller (Warner Control Techniques), aspirated to remove most of hulls, and further hand-picked to obtain hull-free groat samples. Heat treatment was applied to dehulled oat groats to inactivate the native enzymes. Oat groats (100 g) were steamed in a kitchen vegetable steamer with a lid by placing the groats on the metal shelf (layered with a cheese cloth) over boiling water for 20 min. After steaming, the samples were dried in a forced air oven at 78 °C for 1h, 63 °C for 30 min and 50 °C for overnight. The oat groats were then ground using the Retsch ZM 200 sample mill (Retsch GmbH, Rheinische Straβe 36, 42781 Haan, Germany) equipped with a 0.5 mm screen into flours. Beta-glucan content was determined using the mixed-linkage beta-glucan assay kit (Megazyme International Ireland Ltd., Wicklow, Ireland). All the determination was done in duplicate and beta-glucan content was reported on dry matter basis.

**Beta Glucan results:** The beta-glucan content of the 11 different milling varieties ranged between 2.74% and 4.8%, with the lowest reported for Ruffian at both sites.

At Westlock, Except CDC Ruffian, most oat varieties had higher beta glucan level as compared to AC Morgan. Akina, OT3087 and CDC Norseman had more than 4.5% of beta glucan level.

**Table 4: The beta-glucan analysis results from the POGA trial Westlock 2018.**

| Variety | Hull percentage (%) | Flour Moisture (%) | Beta Glucan (%, db) | Beta glucan increase compared to AC Morgan (%) |
|---|---|---|---|---|
| **AC Morgan** | 18.0 | 4.9 | 3.9 | 0 |
| **CS Camden** | 22.8 | 4.9 | 4.4 | 12 |
| **CDC Seabiscuit** | 19.6 | 5.1 | 4.4 | 12 |
| **Triactor** | 22.9 | 5.2 | 4.4 | 11 |
| **CDC Ruffian** | 18.2 | 5.1 | 3.6 | -8 |
| **CDC Orrin** | 28.5 | 4.6 | 4.1 | 4 |

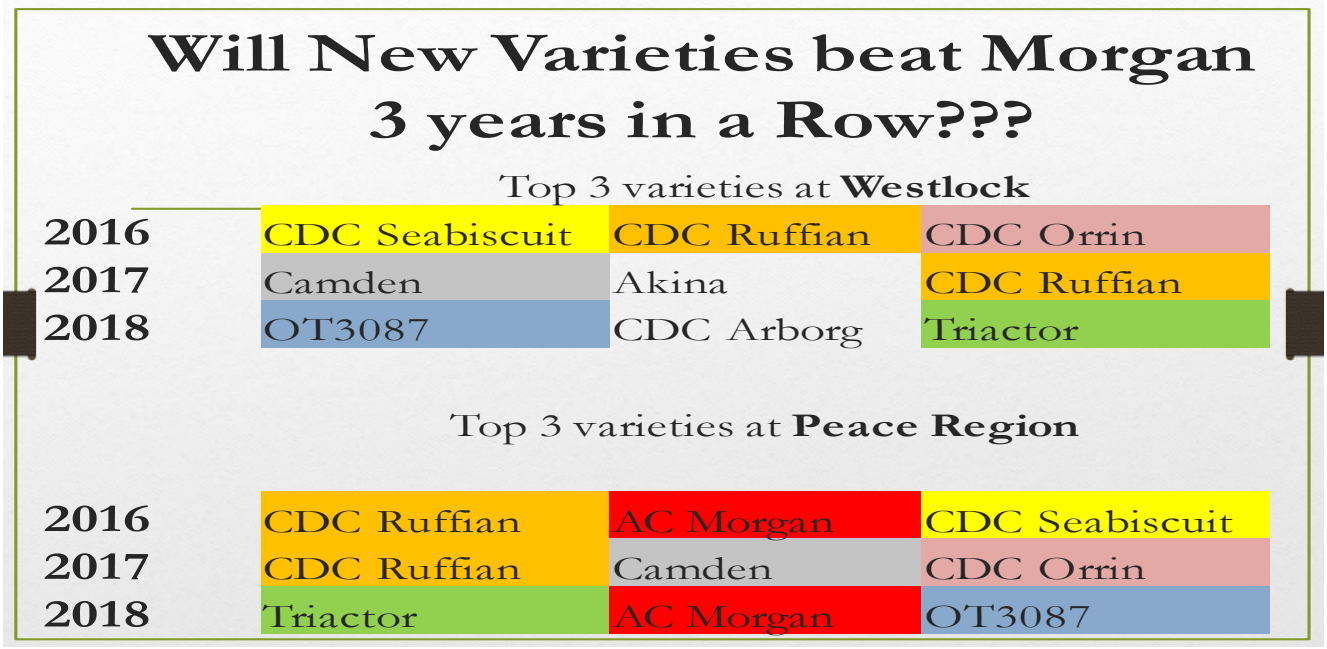
| | | | | |
|---|---|---|---|---|
| **AC Summit** | 20.4 | 5.0 | 4.4 | 10 |
| **AC Arborg** | 22.9 | 4.9 | 4.4 | 11 |
| **Akina** | **28.3** | **4.9** | **4.8** | **22** |
| **ORE3542M** | 22.7 | 4.9 | 4.0 | 3 |
| **CDC Norseman** | 17.6 | 5.0 | 4.5 | 14 |
| **OT3087** | **26.7** | **4.5** | **4.7** | **19** |

**Table 5: The beta-glucan analysis results from the POGA trial Peace region 2018.**

| Variety | Hull percentage (%) | Flour Moisture (%) | Beta Glucan (%, db) | Beta-glucan increase compared to AC Morgan (%) |
|---|---|---|---|---|
| AC Morgan | 21.83 | 4.23 | 3.43 | **0** |
| **Akina** | **26.96** | **3.70** | **4.03** | **17** |
| AC Arborg | 23.91 | 4.07 | 3.78 | **10** |
| CS Camden | 26.72 | 4.12 | 3.79 | **10** |
| CDC Norseman | 17.60 | 3.64 | 3.83 | **12** |
| ORE3542M | 12.09 | 3.98 | 3.53 | **3** |
| **OT3087** | **23.55** | **4.11** | **4.20** | **22** |
| CDC Orrin | 21.03 | 4.21 | 3.41 | **-1** |
| CDC Ruffian | 15.38 | 3.97 | 2.74 | **-20** |
| CDC Seabiscuit | 23.41 | 3.91 | 3.71 | **8** |
| AC Summit | 19.74 | 3.44 | 3.68 | **7** |
| **Triactor** | **24.91** | **3.77** | **4.02** | **17** |

Akina, Triactor, and OT3087 were only varieties to cross the grain millers preferred the level of 4% beta glucan at Peace region. CDC ruffian had consistently the lowest beta glucan levels for both the sites similar to the previous two year's results.

**Conclusion:**




The yield results from last three years suggest that there is potential for the varieties to out-compete Morgan. From the previous two years results, we had observed a visible difference of location on yields and that yields output changes among the varieties at that location too. Ruffian was continuously highest yielding variety at Peace region from last two year and Westlock in 2017 too. However, the Ruffian has the lowest levels of beta-glucan at both location in the year 2016 as well as 2017. Based on the year 2016 data, Seabiscuit performed very well at both locations in 2016 with staying in the top 3 varieties for yield and average above 4.5% of beta-glucan content. However, in 2017, Ruffian was the top yielding variety at both locations and Seabiscuit had issues with lodging at Westlock site in 2017. So it is harder to choose one variety out these two who had shown potential to give strong competition to most popular and with highest acres variety of Alberta, Morgan.

The year 2018 was a little bit different for the trial as we added a few newer entries. OT3087 had shown to be great milling oat with **high yield** and **high beta-glucan** and **high test weight,** which are preferred characteristic for the grain millers.

That being said, as environment and disease conditions can fluctuate greatly from year to year, so it is important to consider yields averaged over multiple years. We hope with more data available, we

would able to speculate for best-suited varieties compared to Morgan for the specific regions of Alberta. Acc. to Andersson and Börjesdotter (2011), the effect of the environment was much greater on molecular weight (71%) than on β-glucan content (42%), while the effect of variety was greater on β-glucan content (23%) than on molecular weight (4%). The present study clearly suggests that in order to supply oat flour with consistent composition and physicochemical properties, there needs to be an oat grain "binning and blending" strategy established based on β-glucan content, aqueous solubility, and viscosity. Furthermore, contract grain production outside the blending approach is also recommended for those products specifically targeted to meet the requirements for including a health claim on the package regarding the risk reduction for cardiovascular diseases.

**Acknowledgments:** We would like to thank **Prairie Oat Growers Association (POGA)** for their full financial assistance and FP Genetics for their contribution in lab analysis for this trial.

We would also like to thank Pibroch colony, Canterra seeds, Canada Seed depot, alliance seed, and FP Genetics for their generous seed donation with this trial. This information is presented with the understanding that no product discrimination is intended and neither endorsement of any variety/product mentioned, nor criticism of named variety/products is implied.

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# GRO Plant Growth Regulator Trial

**Cooperator: Pibroch Colony Location: SW-16-61-26-W4**

## Objectives

1. Compare yield and height reduction if applied manipulator at the correct stage.
2. This trial was an industry sponsored trial work done by GRO.

## Background:

Manipulator™ is a plant growth regulator that was advertised as Engage AGRO, a tool for preventing crop lodging in Wheat. The U.S. Environmental Protection Agency published the regulation establishing a maximum residue limit for **chlormequat chloride** — the active ingredient in Manipulator last year in April. The manipulator is registered for application between the two-leaf stage (Zadoks stage 12) to the flag leaf collar visible stage (Zadoks stage 39). According to Sheri Strydhorst, Alberta Agriculture and Forestry, the most effective application time for consistent height reductions is between Zadoks GS 30-32 (the beginning of stem elongation, when the first internode begins to elongate and the top of the inflorescence is at least 1 cm above the tillering node, to the time when the second node is at least 2 cm above node one).

The objective of this trial was to determine the effects that PGR will have on yield, lodging, height, and protein levels in spring wheat. The 8 most common spring wheat varieties for our area were selected for the trial. A total of 5 HRS (AAC Brandon; AAC Connery; AAC Elie; AAC Redwater and AAC Viewfield). And 3 CPS (5700PR; AAC Penhold and AAC Ryley).

The trial was seeded in a randomized block design with four replications. Plots were seeded 12 m in length and then half of the plot was sprayed with manipulator and a half was left untreated. The manipulator was applied at Zadoks GS 30-32. The crop was then desiccated with Roundup on September 04th and combined with a Wintersteiger plot combine September 28. Each plots sample was cleaned and weighed to determine the yield. A subsample was taken for analysis of protein and bushel weights. The other agronomic information for trial is mentioned in table below.

## Agronomic information

| Date Seeded Soil Temp | Seeding rate | Seed Depth (in) | Fertilizer Seed Placed | Fertilizer Side Banded and *Deep Banded | Herbicides Fungicides Insecticides | Rate | Date |
|---|---|---|---|---|---|---|---|
| May 16<br>16.3 C | 35 plant/ft$^2$ | 1.0 | 11-52-0 @ 48 lbs/ac | 22-0-26-2-.44Cu<br>@ 226 lbs/ac<br>*82-0-0 100lbs/ac | Cleanstart<br>Curtail M,<br>Manipulator<br>Buctril M<br>+ Axial | Label<br>810ml/acre<br>700ml/ac<br>400ml/acre<br>243ml/acre | May 17<br>June 7<br>June 18<br>June 19 |

## Results and Summary

| | Height (cm) | | | | Yield (kg/ha) | | | | Yield (Bu/Acre) | | | | Bushel wt. (lb/bu) | | | | Test Wt. (kg/HL) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Manipulator Treated | | Untreated | | Manipulator Treated | | Untreated | | Manipulator Treated | | Untreated | | Manipulator Treated | | Untreated | | Manipulator Treated | | Untreated | |
| **HRS** | | | | | | | | | | | | | | | | | | | | |
| **AAC Brandon** | 71.3 | fg | 84.5 | b | 5300 | * | 5074 | * | **79** | * | **75** | * | 60 | * | 62 | * | 74 | * | 77 | * |
| **AAC Connery** | 76.5 | de | 91.0 | a | 5399 | * | 5191 | * | **80** | * | **77** | * | 62 | * | 63 | * | 77 | * | 78 | * |
| **AAC Elie** | 71.5 | fg | 84.8 | b | 5462 | * | 5585 | * | **81** | * | **83** | * | 61 | * | 61 | * | 75 | * | 76 | * |
| **AAC Redwater** | 72.0 | efg | 92.0 | a | 5551 | * | 5286 | * | **82** | * | **79** | * | 62 | * | 62 | * | 76 | * | 77 | * |
| **AAC Viewfield** | 67.8 | gh | 83.0 | b | 6193 | * | 5839 | * | **92** | * | **87** | * | 62 | * | 62 | * | 77 | * | 77 | * |
| **CPS** | | | | | | | | | | | | | | | | | | | | |
| **5700PR** | 74.3 | def | 81.8 | bc | 6660 | * | 6413 | * | **99** | * | **95** | * | 61 | * | 62 | * | 75 | * | 76 | * |
| **AAC Penhold** | 66.3 | h | 75.5 | def | 6825 | * | 6011 | * | **101** | * | **89** | * | 62 | * | 63 | * | 77 | * | 77 | * |
| **AAC Ryley** | 77.5 | cd | 86.3 | b | 6461 | * | 6217 | * | **96** | * | **92** | * | 60 | * | 60 | * | 74 | * | 74 | * |

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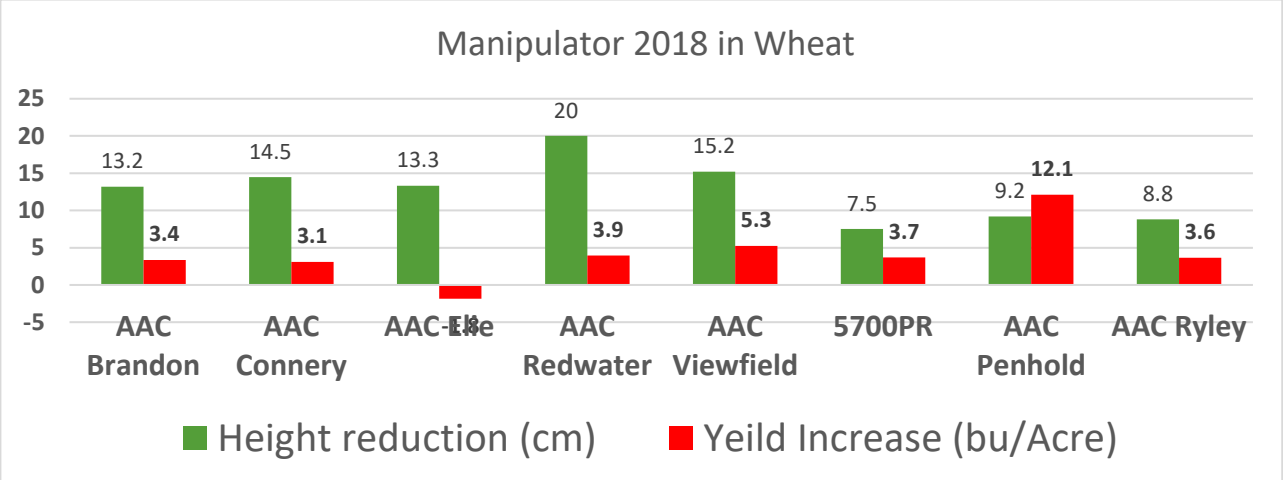
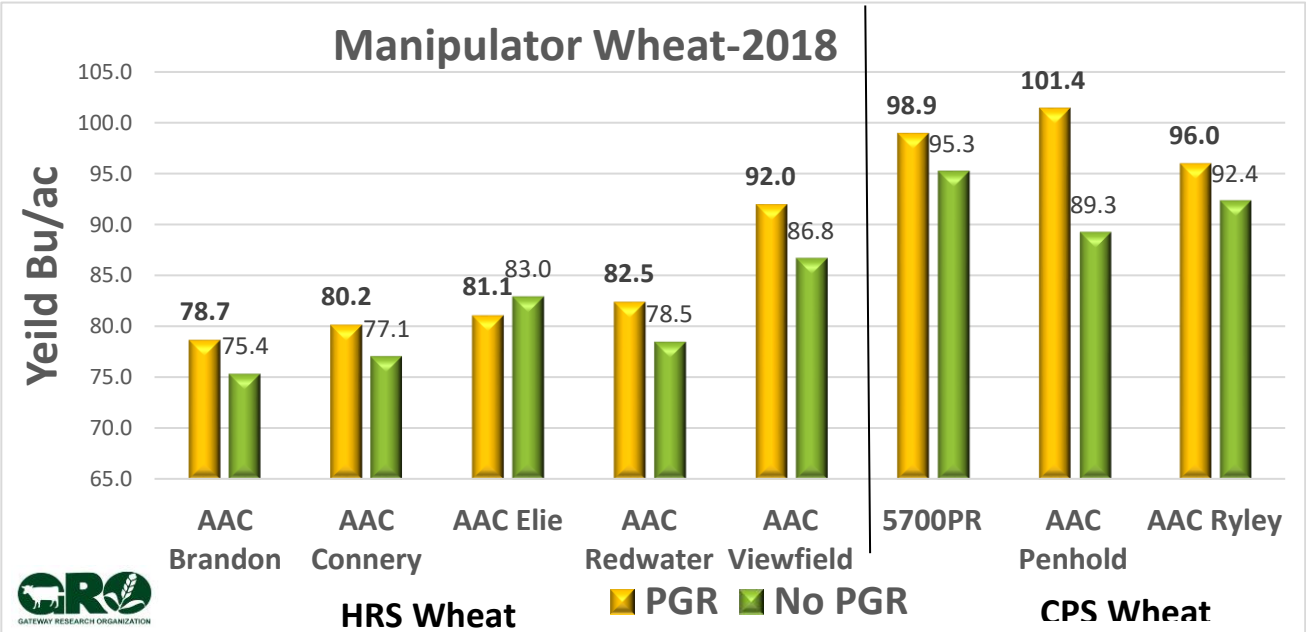
## Results and Summary

The results showed that Manipulator application was effective in height reduction in almost all varieties (statistically significant). As previous research has suggested that timing of application of manipulator is crucial with between Zadoks GS 30-32, an ideal time. The correct timing gives Manipulator to interfere with the functioning of elongation hormone and therefore the growth regulator was equally effective across all varieties. However, for the yield, There was a tendency, not statistically significant, for a greater yield with manipulator application compared to untreated. The difference ranged with an increase of 12 bushels for some varieties to 4 bushels in most varieties to none in AAC Ellie.



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## Protein in Wheat

The manipulator application has shown a tendency to lower the quality parameter in wheat in term of reduction of test weight as well as protein content. As seen in our trial thought reduction was minimal to a 0.5 percentage point reduction in wheat protein to most varieties tested in our trial.

**Engage Manipulator on Wheat Protein Content 2018**

| Variety | Protein Content % | | Change in percentage point with Manipulator |
|---|---|---|---|
| | Untreated | Manipulator Treated | |
| **CWRS** | | | |
| AAC Brandon | 11.9 | 11.8 | -0.1 |
| AAC Connery | 12.3 | 12.1 | -0.2 |
| AAC Elie | 12.9 | 13.0 | 0.1 |
| AAC Redwater | 13.0 | 12.6 | -0.4 |
| AAC Viewfield | 11.8 | 11.3 | -0.5 |
| **CPSR** | | | |
| 5700PR | 11.7 | 11.3 | -0.4 |
| AAC Penhold | 13.0 | 12.0 | -1.0 |
| AAC Ryley | 12.9 | 12.3 | -0.6 |

AAC Penhold was most effective yield advantage with increase in 12 bushel of wheat but also has maximum reduction of protein content of 1 percentage point.

**Acknowledgments:** We would like to thank Engage Agro ( Now BELCHIM) for providing funding for this trial, and providing the Manipulator™ requirements for this trial. We would also like to acknowledge the help from Westlock Seed cleaning plant and other seed growers in proving help in sourcing seed for the trial.

Gateway Research Organization

# Field Crop Development Centre - Barley Varieties Demo Trial

**Cooperator: Pibroch Colony Location: SW-16-61-26-W4**

## Objectives

1. Compare yields of the different barley cultivars developed by FCDC.
2. To see the potential of FCDC varieties that are developed at Lacombe in Westlock environment and soil conditions.

Field Crop Development Centre (**FCDC**) at Lacombe, Alberta is a premier cereal breeding research organization. They are constantly working to develop high yielding enhanced cultivars of barley, wheat, and triticale. Gateway research organization (**GRO**) in our effort to extend knowledge from the premier research association to the farmer's field hosted the demonstration for the barley varieties that are previously released by FCDC and upcoming new varieties that are still under development for commercialization.

We used 20 different cultivars for the barley in this demo trial. The other details are as follows:

| **Seeded** | **Fertilizer** | **Herbicides Fungicides Insecticides** | **Rate** | **Date** |
|---|---|---|---|---|
| **Date:** May 16<br>**Soil Temp:** 16.3 C<br>**Seeding rate:** 27 plant/ft$^2$<br>**Seed Depth (in):** 1.0<br>**Harvest Date:** Sep 6 | **Seed Placed** 11-52-0 @ 48 lbs/ac<br><br>**Side Banded** 22-0-26-2 .44Cu @ 226 lbs/ac<br><br>**Deep Banded***82-0-0 100lbs/ac | Cleanstart<br>Curtail M,<br>Buctril M<br>+ Axial | Label<br>810ml/acre<br>400ml/acre<br>243ml/acre | May 17<br>June 7<br>June 19 |

**Results:**

The trial was seeded in just two replication compared to the usual 3 replication in full research trial. Therefore the data might not be statistically strong however, the aim of this demonstration was to see how FCDC varieties perform in Westlock conditions. The highlighted treatment trended as

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| Barley Varieties | Type of Barley | Yield kg/ha | | Yield bu/ac | | Bushel wt lb/bu | | Tst Wt kg/HL | | TKW(g) 1000 Seeds | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Amisk** | 6 row | 8169 | * | 152 | * | 50 | d | 62 | d | 51 | bcd |
| **AB Cattelac** | 6 row | 8097 | * | 150 | * | 51 | d | 63 | d | 46 | efg |
| **SR 18526** | 6 row | 7313 | * | 136 | * | 51 | d | 62 | d | 47 | d-g |
| **Chigwell** | 6 row | 8073 | * | 150 | * | 52 | d | 64 | d | 46 | efg |
| **SR 16510** | 6 row | 9012 | * | 167 | * | 50 | d | 62 | d | 48 | c-f |
| **AB Advantage** | 6 row, smooth awned feed | 8241 | * | 153 | * | 51 | d | 63 | d | 55 | ab |
| **Vivar** | 6 row semi-dwarf | 9119 | * | 169 | * | 51 | d | 63 | d | 53 | ab |
| **SR 17519** | 6 row | 7543 | * | 140 | * | 51 | d | 63 | d | 52 | bc |
| **M 73629** | 6 row | 6349 | * | 118 | * | 59 | ab | 73 | ab | 41 | hi |
| **HR 558** | 6 row | 6814 | * | 127 | * | 58 | bc | 71 | bc | 42 | gh |
| **SR 17518** | 6 row | 8217 | * | 153 | * | 50 | d | 62 | d | 47 | c-f |
| **FALCON** | 6 row hulless | 5931 | * | 110 | * | 60 | a | 75 | a | 38 | i |
| **TYTO** | 6 row hulless | 7095 | * | 132 | * | 57 | c | 70 | c | 43 | fgh |
| **MB 555** | 6 row | 6652 | * | 124 | * | 59 | ab | 73 | ab | 37 | i |
| **SR 17515** | 6 row | 8586 | * | 159 | * | 51 | d | 63 | d | 46 | efg |
| **CANMORE** | 2 row food | 7456 | * | 139 | * | 53 | d | 65 | d | 53 | ab |
| **BENTLEY** | 2 row Malting | 7962 | * | 148 | * | 52 | d | 64 | d | 57 | a |
| **TR 16629** | 2 row | 7574 | * | 141 | * | 51 | d | 63 | d | 49 | cde |
| **LOWE** | 2 row Malting | 8152 | * | 151 | * | 52 | d | 65 | d | 54 | ab |
| **TR 17639** | 2 row | 7771 | * | 144 | * | 52 | d | 64 | d | 54 | ab |

Means followed by same letter or symbol do not significantly differ (P=0.05).

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# 2018 Heifer Pasture Summary

Coordinator: **Rick Tarasiuk,** Crop Field Technician

Location: Heifer Pasture SE-23-61-26 W4

Stocking Rate: 100 heifers & 2 bulls;

Contributors:

| | |
|---|---|
| **Richard Geiger** | **Matt Haisen** |
| **George Kerckhof** | **Darren Dunford** |
| **Maurice Kruk** | **Glen Siegle** |

Entry Date: June 07, 2018

Exit Date: October 16, 2018

Objectives:

1. To demonstrate a rotational grazing system and its effect on carrying capacity.
2. Provide a site for further research and producer learning activities.

## History & Field Design

The pasture was established in 1979 and was originally used for steers. In 1988, the first heifers were put into the pasture and have remained ever since. The 160-acre pasture is split into 16 paddocks; approximately 10 acres each. There is a central watering/ loafing area as well as a handling facility. The perimeter is fenced with 4 double strand barbed wire, and cross fencing is done with 2 single strand barbed wire that is powered with a solar electric fence. Each paddock is rotationally grazed to allow alternate periods of grazing and rest. If managed properly, these rest periods allow the grass a chance to replenish nutrients after defoliation and, therefore, increase grass production. In a continuous grazing situation, some forage resources are continually stressed (no rest); while others may be underutilized as the animals will repeatedly

graze the most palatable species. In this situation, the preferred species will begin to decline and less palatable species or weeds will begin to dominate the pasture. In 2015, much-needed repair work was performed on the fencing and solar in 2018, the GRO board decided to use the pasture for educational purposes and we are planning some changes to the pasture layout.

## Herd Health

All heifers were weighed and inspected for overall health and soundness on entry day in June. The heifers were weighed again on exit day in October. All animals were vaccinated for Hoof-rot and CyLence® pour-on insecticide (fly control) was applied on entry day. A pasture blend of loose mineral was fed as per product indications in each paddock. Overall, in 2018 there were no health issues with the heifers during their stay at our pasture.

## Breeding

One black Angus bull, owned by Maurice Kruk, and one red Angus bull, owned by Glen Siegle, were used in the pasture. Bulls entered the pasture on the same day as the heifers and remained until exit day. The heifers were palpated for pregnancy upon exit, and it was determined that the overall open rate was just 3% (i.e., 3 out of 98 heifers preg checked open).

## Discussion

The GRO Heifer Pasture was established in 1979, making the pasture 35 years old, which is a well-aged pasture. The pasture was originally seeded to a mixture of grasses and legumes but is now predominantly meadow foxtail. A variety of other grass species, including orchard grass, Timothy, meadow brome, and other brome species, can still be found out on pasture. In terms of forbs or legume type species, these are limited on the pasture with some paddocks having no broad leaf species other than Canada thistle. The species that do still exist in some of the paddocks are clovers, alfalfa and cicer milkvetch.

## 2018 GRO Heifer Pasture Calculations Summary

| | |
|---|---|
| **Total # of Heifers** | **100** |
| **Total # of Heifers PREG CHECKED** | **98** |
| **Total # of BULL** | **2** |
| **Total # of Heifers OPEN** | **3** |
| **# of Grazing Days** | **131** |
| **PREGNANCY RATE** | **97%** |
| **Average Weight of Heifers at Entry (lbs)** | **937** |
| **Average Weight of Heifers at Exit (lbs)** | **1149** |
| **Average Weight Gain/Heifer Entry to Exit (lbs)** | **203** |
| **Average Daily Gain/Heifer @ EXIT (lbs)** | **1.55** |

The group of heifers in 2018, contained a mix of different breeds of cattle and within each breed type some were previously bred and some were bred at pasture so the information in the above table contained the overall average of the whole group.

**If you are interested to participate in GRO heifer pasture contributor-run program. Please email to grohome@telus.net, we plan to meet in end of March to discuss the course of action for the following year.**

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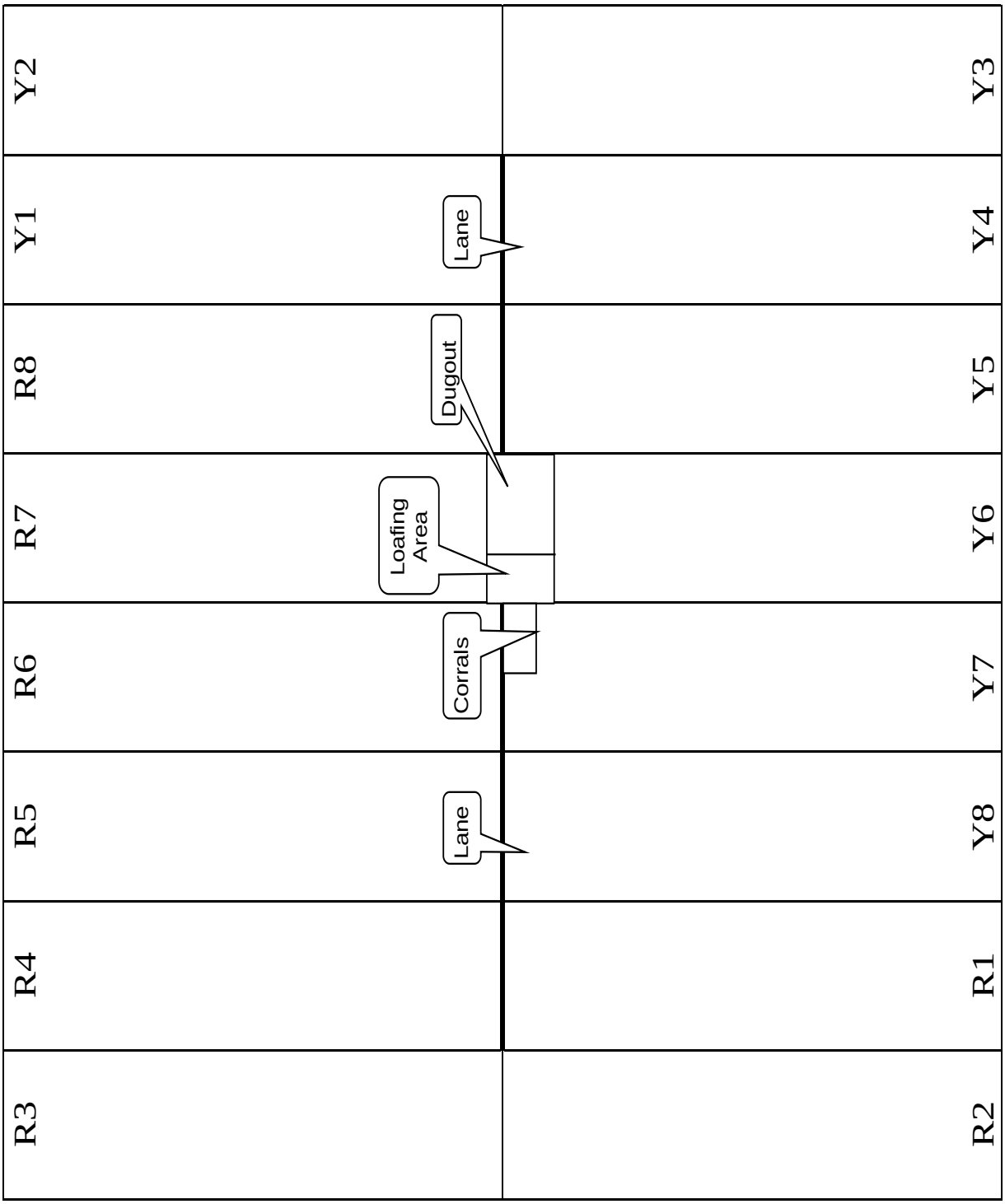
# GRO Heifer Pasture Map

## Current : Single Alley System

North




Feb 22, 2018

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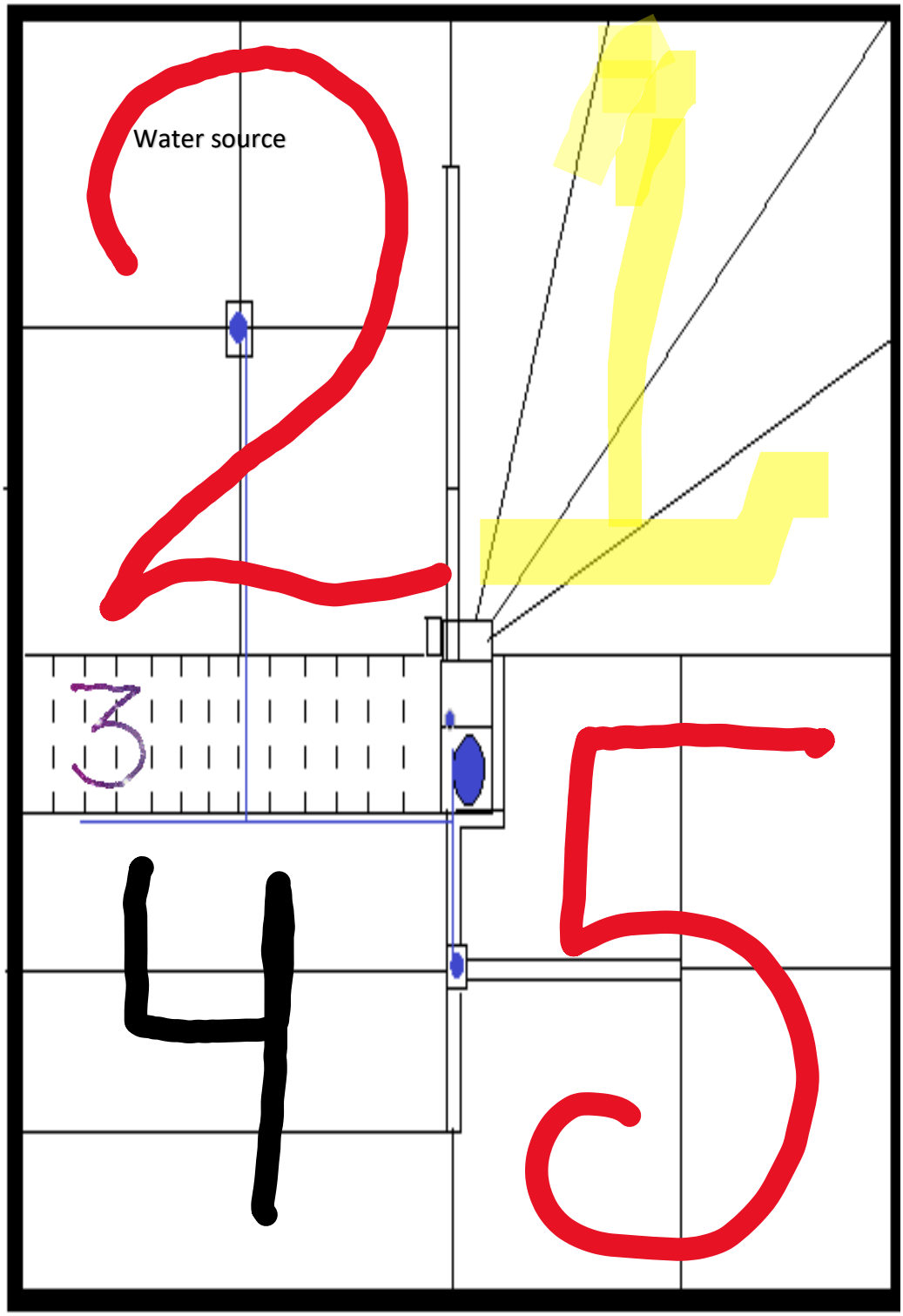
**Proposed Cell design for demonstration at GRO for 2018 Five different Cell Design Demonstration**



# Regional Silage Trial

## Co-operators: Pibroch Colony – SW-16-61-26-W4

### Objectives

- Compare silage yield and nutritional value of new and commonly used barley, oat and triticale silage varieties.
- To provide yield and agronomic data for use in the Alberta Agriculture publication "Silage Varieties for Alberta."

### Background

A randomized complete block with 4 replicates of each treatment was used. Plot size was 1.37 meters wide (6 rows with 9-inch spacing) by 10 meters long. Silage was harvested, samples were weighed and sent for wet chemistry analysis to obtain moisture and feed quality.

Seeding rates were based on 1000 kernel weight and germination in order to achieve 300 seeds/$m^2$, 300 seeds/$m^2$, and 370 seeds/$m^2$ that translates to about 28, 28, and 34 plants per square foot for barley, oat and triticale respectively. It is very important to calculate seeding rates using this method (using germination % and 1000 kernel weight) to prevent under or overseeding. Crops with larger seed size have fewer seeds per pound/bushel. They need to have more pounds/bushel seeded per acre to keep viable seed counts the same as crops with small seed size.

**Table: Project description**

| Action | Barley Silage | Oat Silage | Triticale Silage |
|---|---|---|---|
| **Seeding** | May 29 | May 29 | May 29 |
| **Seeding Specifics** | Depth: 1.5 inch<br>Row Spacing: 9 inches | | |
| **Equipment** | Fabro zero- till drill with atom jet openers | | |
| **Fertilizer applied** | **Fertilizer Seed placed** | 11-52-0 at 48 lbs/ac | |

| | | | |
|---|---|---|---|
| | **Fertilizer Side Banded** | 22-0-26-2-.44Cu at 226 lbs/ac | |
| | **Deep Banded** | *82-0-0 100 lbs/ac | |
| **Herbicides applied** | Cleanstart Label | May 17 | |
| | Cleanstart 2 x Label | May 28 | |
| | Curtail M 610ml/acre | June 8 | |
| | Buctril M 400ml/ac | June 20 | |
| | + Axial on Barley 243ml/ac | | |
| **Precipitation ( mm)** | 284 | | |
| **Harvest Stage** | soft dough stage | late milk stage | Early dough stage |
| **Harvest date** | August 08 | August 07 | August 07 |

## Barley Varieties Used in the Trial

- **CDC Austenson** - A two-row, rough-awned hulled feed barley with very high grain yield and short, strong straw. Large plump kernels. A top yielding two-row with improved, performance over Xena. Resistant to stem rust and covered and false loose smut. Medium maturity. Susceptible to scald and true loose smut.
- **Altorado** – A two-row, spring feed barley with good resistance to lodging and a fair to good resistance to drought conditions.
- **Canmore** – A two-row, medium height, and general purpose barley. This variety fits in the feed market with the added food grade opportunities in the pearling and Shochu markets. (Shochu is an alcoholic beverage that is replacing Sake in Japan). Canmore Barley has excellent pearling qualities, starch content and alcohol yields. Other features include High yielding, improved disease resistance, increased percentage of plump seed and improved lodging resistance.
- **CDC Coalition** – high yielding A two-row, feed barley variety.
- **Champion** – A two-row, medium height, hulled spring feed barley. It has suited for Western Canada and has high Relative Feed Value (RVF) with excellent standability and improved disease resistance.
- **Claymore (TR12733)** – A two-row, spring feed barley, semi-erect growth habit at tillering. good resistance to lodging and shattering, good tolerance to straw breakage, fair to good tolerance to drought.

- **Conlon** – Early maturing, A two-row, feed and malting barley variety with *smooth awns.*
- **Seebe** – A two-row, rough awned feed barley. Improved yields and later maturity in comparison to Bridge. Well adapted to Alberta growing conditions.
- **Bentley** – is a Two-rowed, rough awned, malting barley, well-adapted to the Brown, Black and Grey Soil Zones of western Canada. Bentley has high grain and forage yields, that combined with its malting quality should make it excellent multipurpose barley for the non-scald areas of western Canada.
- **Amisk –** Rough awned, 6-row, semi-dwarf general purpose barley with increased feed efficiency, strong straw for decreased lodging.
- **AC Ranger –** Early maturing, 6-row silage barley with a flexible planting window.
- **Sundre** – High yielding 6-row barley variety with good disease resistance.
- **SR14501** – Six-rowed and has a semi-smooth awn, newer variety that can be used for making silage or green feed, and it can be used for swath grazing. It has excellent standability and lodging resistance.

## Oat Varieties Used in the Trial

- **CDC Baler –** A forage oat with very long wide leaves, slightly taller than the standard forage variety, excellent lodging resistance, and exceptional forage yield. It generally has higher energy and protein values than other forage oats.
- **CDC Minstrel –** Good lodging resistance, sensitive to day-length, Short stature, easy harvesting, High yields.
- **AC Morgan –** High yielding, later maturing milling oat with good lodging resistance and is commonly used for silage or green feed. Susceptible to crown and stem rust, moderately susceptible to smuts. Adapted to black and grey wooded soil zones of Alberta.
- **CDC Haymaker –** A spring oat with high forage yield potential and forage quality, good grain quality and improved grain yield over CDC Baler. Plump grain with high seed weight, grain yield better than CDC Baler. Crown rust resistance similar to CDC Dancer, susceptible to smut.
- **CDC Seabiscuit –** high yielding milling oat variety with good straw strength for reduced lodging.
- **CDC SO-1 –** Designed for ruminant feeding programs. Low lignin hull with high oil groat (better digestibility). Early maturing, very digestible brown feed oat variety with high fat content and does not need to be rolled. Short, strong straw for reduced lodging.
- **AC Murphy –** widely adapted forage oat, with high yields, improved lodging resistance and is well suited for silage, swath grazing, and green feed.

- **ORe3542M –** High yielding, high quality, white-hulled milling oat. Medium maturing with strong straw and crown rust resistance.
- **Waldern –** late maturing, high yielding feed oat variety with good lodging resistance. •

## Triticale Varieties Used in the Trial

- **Taza –** Awnletted (reduced awn expression) standard height spring triticale line intended for use as a feed grain conserved forage, swath grazing crop and potentially for industrial use. Adapted to the Canadian Prairie Provinces. This line has good lodging resistance, good test weight, and high kernel weight
- **Bunker –** early maturing, reduced awn forage variety with great digestibility, high-fat content and high silage yields.
- **Sunray –** Adapted to the Canadian prairies and represents an improvement in ergot resistance for Canadian triticale. Early maturing, spring triticale variety with short-statured for increased resistance to lodging. It is resistant to the prevalent races of leaf rust, stem rust, common bunt, root rot and is moderately resistant to grain sprouting.
- **T256 –** spring triticale, forage-type line, is more digestible because it has reduced awns, is shorter, and has lower lignin content. It is also favorable for swath grazing.
- **Tyndal –** A reduced awn spring triticale designed for conserved forage production (silage/greenfeed). Good leaf and stem rust resistance. An earlier maturing variety with good lodging resistance and high forage yields.

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## Barley Silage results from 2018

| Barley Silage Two Row | Height cm | | % of Check Compared to CDC Austenson | Yield (@65% moisture) Tonne/acre | | Crude Protein % | Total Digestible Nutrients % | Calcium % | Phosphorus % | Potassium % | Magnesium % | Relative Feed Value % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CDC AUSTENSON** | 82.2 | a | 100 | 12.7 | * | 6.0 | 66.9 | 0.17 | 0.19 | 1.2 | 0.11 | 135 |
| **ALTORADO** | 80.7 | bc | 106 | 13.5 | * | 9.4 | 66.6 | 0.31 | 0.14 | 1.6 | 0.11 | 141 |
| **CANMORE** | 86.0 | b | 104 | 13.2 | * | 9.6 | 65.4 | 0.34 | 0.16 | 1.49 | 0.1 | 134 |
| **CDC COALITION** | 75.3 | c | 100 | 12.7 | * | 9.1 | 66.9 | 0.31 | 0.18 | 1.49 | 0.11 | 136 |
| **CHAMPION** | **82.5** | **b** | **109** | **13.9** | * | **8.2** | **71.1** | **0.31** | **0.15** | **1.44** | **0.1** | **170** |
| **CHIGWELL** | 84.7 | c | 83 | 10.5 | * | 7.6 | 66.4 | 0.38 | 0.1 | 1.74 | 0.08 | 134 |
| **CLAYMORE** | 81.5 | a | 100 | 12.7 | * | 7.4 | 63.3 | 0.33 | 0.16 | 1.44 | 0.12 | 120 |
| **CONLON** | 70.3 | c | 83 | 10.6 | * | 8.5 | 67.5 | 0.33 | 0.19 | 1.53 | 0.12 | 149 |
| **SEEBE** | 89.8 | b | 95 | 12.1 | * | 7.2 | 63.1 | 0.39 | 0.18 | 1.52 | 0.11 | 119 |
| **BENTLEY** | 80.2 | | 92 | 11.7 | * | 9.7 | 67.2 | 0.37 | 0.14 | 1.77 | 0.1 | 144 |
| **Six row** | | | | | | | | | | | | |
| **AMISK** | 71.3 | | 88 | 11.2 | * | 8.5 | 66.8 | 0.34 | 0.16 | 1.49 | 0.10 | 140 |
| **RANGER** | 86.2 | | 102 | 13 | * | 7.6 | 66.6 | 0.37 | 0.16 | 1.77 | 0.10 | 138 |
| **SR14501** | 96.7 | | 102 | 13 | * | 8.6 | 66.5 | 0.29 | 0.19 | 1.41 | 0.11 | 144 |
| **SUNDRE** | 89.8 | | 103 | 13.1 | * | 9.3 | 64.5 | 0.38 | 0.18 | 1.56 | 0.11 | 130 |

STAGE of Barley at silage – soft dough

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| Oat Silage 2018 | Height cm | | % of Check Compared to CDC Baler | Yield (@65% moisture) Tonne/acre | | Crude Protein % | Total Digestible Nutrients % | Calcium % | Phosphorus % | Potassium % | Magnesium % | Relative Feed Value % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CDC Baler** | 140 | a | 100 | **15.5** | * | 10.1 | 61.8 | 0.27 | 0.20 | 1.01 | 0.12 | 119 |
| **CDC Minstrel** | 117 | bc | 88 | 13.6 | * | 8.7 | 62.7 | 0.22 | 0.17 | 1.40 | 0.10 | 121 |
| **AC Morgan** | 123 | b | 99 | 15.3 | | 7.6 | 59.8 | 0.21 | 0.20 | 1.47 | 0.10 | 111 |
| **CDC Haymaker** | 109 | c | 95 | 14.8 | * | 8.2 | 62.9 | 0.18 | 0.16 | 1.32 | 0.08 | 116 |
| **CDC Seabiscuit** | 124 | b | 99 | 15.3 | * | 8.3 | 61.4 | 0.21 | 0.20 | 1.14 | 0.09 | 126 |
| **CDC SO-I*** | 110 | c | 90 | 14.0 | * | 9.0 | **63.6** | 0.25 | 0.18 | 1.56 | 0.12 | 130 |
| **Murphy** | 147 | a | 97 | 15.1 | * | 7.9 | 61.6 | 0.20 | 0.14 | 1.31 | 0.09 | 106 |
| **ORe3542M** | 110 | c | 86 | 13.4 | * | 9.8 | 62.4 | 0.20 | 0.19 | 1.61 | 0.12 | 122 |
| **Waldern** | 123 | b | 95 | 14.8 | * | 9.0 | 60.7 | 0.22 | 0.21 | 1.30 | 0.11 | 117 |

STAGE of Oats at silage – Milk

| Triticale Silage 2018 | Height cm | | % of Check Compared to Taza | Yield (@65% moisture) Tonne/acre | | Crude Protein % | Total Digestible Nutrients % | Calcium % | Phosphorus % | Potassium % | Magnesium % | Relative Feed Value % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Taza** | 120.7 | b | 100 | 14.3 | * | 8.7 | 62.3 | 0.18 | 0.21 | 1.36 | 0.08 | 115 |
| **Bunker** | 128.3 | a | 101 | 14.4 | * | 8.6 | 58.7 | 0.19 | 0.16 | 1.15 | 0.09 | 105 |
| **Sunray** | 109.2 | c | 94 | 13.4 | * | 9.0 | 61.3 | 0.23 | 0.17 | 1.53 | 0.08 | 116 |
| **T256** | **105.0** | **c** | **104** | **14.8** | * | **7.9** | **61.7** | **0.15** | **0.19** | **1.11** | **0.10** | **125** |
| **Tyndal** | 118.7 | b | 94 | 13.4 | * | 9.0 | 60.1 | 0.20 | 0.19 | 1.49 | 0.08 | 96 |

STAGE of Triticlae at silage – Late Milk

**Feb 22, 2018**

# Perennial Forage Project

**Co-operators: Ken Anderson – NW-32-59-2-W5**

**Years** 2016 - 2019

**Project partners:**
Alberta Beef Producers
Alberta Agriculture and Forestry
Chinook Applied Research Association
Foothills Forage and Grazing Association
North Peace Applied Research Association
Lakeland Applied Research Organization
Battle River Research Group
West-Central Forage Association
Mackenzie Applied Research Association
Peace Country Beef and Forage Association

## Objectives

- To provide unbiased, current and comprehensive regional data regarding the establishment, winter survival, yield and economics of specific species and varieties of perennial forage crops.
- To identify perennial crop species/varieties that demonstrate superior establishment, hardiness, forage yield and nutritional quality characteristics in different eco-regions of Alberta.
- To assess any benefits from growing mixtures of selected species.

## Background:

Perennial forages includes a diverse range of grasses and legumes that are utilized by livestock producers for a wide variety of purposes – from hay and greenfeed to summer pasture and winter grazing through stockpiled forage. They make up one of the largest sources of livestock feed on the prairies and the wide diversity in growth characteristics makes them ideal for many purposes.

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According to the Alberta Agriculture's Agriprofits Benchmarks, two thirds the cost of maintaining a cow is related to pasture, stored feed and bedding. Therefore, managing the constant supply of quality perennial forage is very important. Identification of high yielding varieties for different areas of the province will contribute to a positive economic return. Forage producers in Alberta have had limited access to information on new perennial crops in recent years. This project is intended to bridge the information gap by evaluating a number of species and varieties at several locations in Alberta. It includes test cultivars which have been developed in recent years but have had limited regional evaluation beside varieties which are commonly grown in the province. This trial has 11 types of perennial grasses, 14 types of Legume plus 9 grass/legume mixes were selected for evaluation.

GRO trials were seeded as planned on 02 June in 2016; Seeding depth (0.5 inches). The site was sprayed with Bromax @ 250 ml/acre. Yield samples were not collected during the establishment year.

| Species | Variety | Seeding Rate (lb/A) |
|---|---|---|
| **GRASS** | | |
| Meadow brome | Fleet | 14 |
| | AC Admiral | 18 |
| Hybrid Brome | Success | 12 |
| | Knowles | 12 |
| Wheatgrasses | | |
| Pubsecent | Greenleaf | 10 |
| Intermediate | Chief | 10 |
| Crested | Kirk | 6 |
| Green Wheatgrass | AC Saltlander | 9 |
| Russian Wildrye | Tom | 8 |
| Fojtan Festulolium | | 20 |
| Orchard Grass | Killarney | 10 |
| Tall Fescue | Courtney | 8 |
| Timothy | Grinstad | 4 |

| | | |
|---|---|---|
| **Alfalfa** | AC Grazeland | 8 |
| | Dalton | 8 |
| | 20-10, | 8 |
| | Halo | 8 |
| | Rangelander | 8 |
| | Rugged | 8 |
| | Spreder 4 | 8 |
| | Spredor 5 | 8 |
| | Yellowhead | 8 |
| | PV Ultima | 8 |
| | 44-44, | 8 |
| Sainfoin | AC Mountainview | 30 |
| | Nova | 30 |
| Cicer Milk Vetch | Veldt | 13 |
| | Oxley 2 | 13 |

| **Species** | **Variety** | **Seeding Rate (lb/A)** |
|---|---|---|
| Mix 1 | Fleet Meadow Brome | 7 |
| | Yellowhead | 4 |
| Mix 2 | Success Hybrid Brome | 7 |
| | Yellowhead | 4 |
| Mix 3 | AC Armada Meadow Br | 7 |
| | Yellowhead | 4 |
| Mix 4 | Fleet Meadow Brome | 7 |
| | Spredor 5 | 4 |
| Mix 5 | Success Hybrid Brome | 7 |
| | Spredor 5 | 4 |
| Mix 6 | AC Armada Meadow Br | 7 |
| | Spredor 5 | 4 |
| Mix 7 | Fleet Meadow Brome | 7 |
| | AC Mountainview | 15 |
| Mix 8 | Success Hybrid Brome | 7 |
| | AC Mountainview | 15 |
| Mix 9 | AC Armada Meadow Br | 8 |
| | AC Mountainview | 15 |

**Results:**

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The yield result for 2017 and 2018 are in the table below.

Please note 2018 was the 3rd year of establishment of the perennial forages. The higher moisture experienced in 2017 allowed for the excellent establishment of the grass. However, excessive moisture or severe winter conditions may have had a role in the poor establishment of the legumes, as observed from the yield data compared from 2017 to 2018. The Sainfoin varieties were the worst affected legumes and didn't survive at all.

| | NAME (Grasses) | Stand Assessment (%) | 65% H2O (Yield) Tonne/Acre | |
|---|---|---|---|---|
| | | | 2017 | 2018 |
| 1 | Fleet Meadow Brome | 74 | 18.6 bc | 4.74 bc |
| 2 | AC Admiral Hybrid Brome | 71 | 15.1 cd | 4.11 cd |
| 3 | Success Hybrid Brome | 69 | 23.2 ab | 5.82 ab |
| 4 | Knowles Hybrid Brome | 69 | 16.2 cd | 5.31 abc |
| 5 | Greenleaf Pubescent Wheatgrass | 60 | 27.0 a | 4.68 bc |
| 6 | Kirk Crested Wheatgrass | 40 | 8.4 e | 3.27 d |
| **7** | **AC Saltlander Green Wheatgrass** | **80** | 16.4 cd | 6.23 a |
| 8 | Fojtan Festulolium | 20 | 10.6 de | 0.06 f |
| 9 | Killarney Ochard Grass | 21 | 15.4 cd | 1.72 e |
| 10 | Courtney Tall Fescue | 33 | 22.9 ab | 1.51 e |
| 11 | Grinstad Timothy | 33 | 18.3 bc | 2.17 e |

| | NAME (legumes) | Stand Assessment (%) | 65% H2O (Yield) Tonne/Acre | |
|---|---|---|---|---|
| | | | 2017 | 2018 |
| 1 | Assalt ST Alfalfa | 21 | 22.7 a | 2.6 b |
| 2 | Dalton | 53 | 28.2 a | 4.0 b |
| 3 | 20--10 | 40 | 26.1 a | 4.1 b |
| 4 | Halo | 13 | 23.3 a | 2.7 b |
| 5 | Rugged | 50 | 24.8 a | 3.5 b |
| 6 | Spreder 4 | 38 | 23.1 a | 3.2 b |
| 7 | Spredor 5 | 69 | 22.7 a | 4.5 b |
| **8** | **Yellowhead** | **75** | **28.4 a** | **6.1 a** |

| | | | | | | |
|---|---|---|---|---|---|---|
| 9 | PV Ultima | 31 | 26.3 | a | 2.9 | b |
| 10 | 44--44 | 38 | 22.1 | a | 3.2 | b |
| 11 | AC Mountainview Sainfoin | 3 | 7.6 | bc | 0 | |
| 12 | Nova Sanfoin | 0 | 3.2 | c | 0 | |
| 13 | Veldt Cicer Milk Vetch | 41 | 9.3 | bc | 2.8 | b |
| 14 | Oxley 2 Cicer Milk Vetch | 48 | 11.0 | b | 2.9 | b |

Sainfoin and Cicer Milk Vetch are bloat-safe legumes and are gaining in popularity for use in pastures to help mitigate the risks of bloat associated with Alfalfa. However, both are difficult to establish, and we have seen a very poor establishment of the Sainfoin compared to Milk Vetch and Alfalfa.

| | | Stand Assessment (%) | | 65% H2O (Yield) Tonne/Acre | | | |
|---|---|---|---|---|---|---|---|
| | **NAME (Grass-legume mix)** | **Grasses** | **Legumes** | **2017** | | **2018** | |
| 1 | Fleet MB / Yellowhead | 46 | 29 | 20.5 | * | 5.2 | ab |
| 2 | Success HB/Yellowhead | 46 | 29 | 20.4 | * | 6.8 | a |
| 3 | AC Knowles/Yellowhead | 58 | 23 | 20.9 | * | 6.8 | a |
| 4 | Fleet MB / Spredor 5 | 46 | 34 | 20.6 | * | 5.8 | ab |
| 5 | Success HB/Spredor 5 | 48 | 33 | 20.1 | * | 7.1 | a |
| 6 | AC Knowles MB/Spredor 5 | 63 | 23 | 20.1 | * | 7.4 | a |
| 7 | Fleet MB/AC Mountainview | 55 | 0 | 20.1 | * | 4.3 | b |
| 8 | Success HB/AC Mountainview | 53 | 0 | 19.4 | * | 5.8 | ab |
| 9 | AC Knowles MB/AC Mountainview | 73 | 0 | 26.0 | * | 6.7 | a |

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The nutritional quality analyses of the perennial forages from 2018 are as below.

| Species | Treatment name | Crude Protein | Total Digestible Nutrients | Net Energy Maintenance | Acid Detergent Fibre | Relative Feed Value | Calcium | Phosphorus | Potassium | Magnesium |
|---|---|---|---|---|---|---|---|---|---|---|
| Grass Name | | % | % | MCal/Kg | % | | % | % | % | % |
| 1 | Fleet Meadow Brome | 8.91 | 60.58 | 1.42 | 34.23 | 99.23 | 0.51 | 0.17 | 1.61 | 0.12 |
| 2 | AC Admiral Hybrid Brome | 7.90 | 64.54 | 1.45 | 33.05 | 102.76 | 0.56 | 0.19 | 1.77 | 0.12 |
| 3 | Success Hybrid Brome | 7.17 | 62.58 | 1.45 | 33.86 | 96.70 | 0.35 | 0.17 | 1.52 | 0.08 |
| 4 | Knowles Hybrid Brome | 7.49 | 63.99 | 1.46 | 33.04 | 98.93 | 0.39 | 0.15 | 1.50 | 0.10 |
| 5 | Greenleaf Pubescent Wheatgrass | 7.01 | 58.75 | 1.37 | 36.90 | 87.01 | 0.36 | 0.20 | 1.46 | 0.08 |
| 6 | Kirk Crested Wheatgrass | 7.36 | 61.73 | 1.45 | 33.41 | 102.62 | 0.30 | 0.14 | 1.05 | 0.07 |
| 7 | AC Saltlander Green Wheatgrass | 7.94 | 63.14 | 1.46 | 33.01 | 102.25 | 0.32 | 0.17 | 1.49 | 0.08 |
| 8 | Fojtan Festulolium | 14.38 | 64.63 | 1.54 | 28.88 | 131.50 | 0.58 | 0.27 | 2.03 | 0.19 |
| 9 | Killarney Ochard Grass | 9.99 | 63.99 | 1.42 | 34.59 | 104.35 | 0.44 | 0.30 | 2.55 | 0.16 |
| 10 | Courtney Tall Fescue | 10.89 | 64.37 | 1.45 | 33.29 | 116.12 | 0.41 | 0.23 | 1.89 | 0.14 |
| 11 | Grinstad Timothy | 7.87 | 65.15 | 1.46 | 32.98 | 109.93 | 0.29 | 0.19 | 1.39 | 0.09 |

The legumes samples were collected from the varieties those were at least 50% in establishment.

| Species | Treatment name | Crude Protein | Total Digestible Nutrients | Net Energy Maintenance | Acid Detergent Fibre | Relative Feed Value | Calcium | Phosphorus | Potassium | Magnesium |
|---|---|---|---|---|---|---|---|---|---|---|
| Legumes | | % | % | MCal/Kg | % | | % | % | % | % |
| 1 | Dalton | 14.95 | 50.62 | 1.41 | 39.12 | 98.50 | 1.93 | 0.17 | 1.29 | 0.23 |
| 2 | Rugged | 15.73 | 52.23 | 1.40 | 38.52 | 104.31 | 2.14 | 0.21 | 1.50 | 0.27 |
| 3 | Spredor 5 | 16.25 | 51.87 | 1.41 | 38.79 | 102.90 | 2.15 | 0.21 | 1.77 | 0.24 |
| 4 | Yellowhead | 15.20 | 44.51 | 1.23 | 46.89 | 80.24 | 1.67 | 0.18 | 1.25 | 0.27 |
| 5 | Veldt Cicer Milk Vetch | 18.04 | 63.28 | 1.45 | 37.22 | 135.80 | 1.52 | 0.27 | 2.53 | 0.34 |

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| Species | Treatment name | Crude Protein | Total Digestible Nutrients | Net Energy Maintenance | Acid Detergent Fibre | Relative Feed Value | Calcium | Phosphorus | Potassium | Magnesium |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **Fleet MB / Yellowhead** | 10.83 | 62.20 | 1.46 | 36.70 | 102.82 | 0.86 | 0.19 | 1.87 | 0.17 |
| 2 | **Success HB/Yellowhead** | 8.26 | 61.78 | 1.45 | 37.33 | 90.96 | 0.61 | 0.18 | 1.59 | 0.12 |
| 3 | **AC Knowles/Yellowhead** | 8.37 | 61.23 | 1.45 | 37.41 | 93.15 | 0.61 | 0.16 | 1.67 | 0.11 |
| 4 | **Fleet MB / Spredor 5** | 9.95 | 59.90 | 1.43 | 38.29 | 93.14 | 0.89 | 0.16 | 1.68 | 0.16 |
| 5 | **Success HB/Spredor 5** | 9.06 | 59.19 | 1.45 | 37.34 | 90.43 | 0.81 | 0.17 | 1.46 | 0.14 |
| 6 | **AC Knowles MB/Spredor 5** | 7.92 | 65.08 | 1.51 | 34.85 | 97.19 | 0.48 | 0.17 | 1.54 | 0.10 |
| 7 | **Fleet MB/AC Mountainview** | 7.68 | 63.63 | 1.47 | 36.37 | 90.16 | 0.51 | 0.19 | 1.83 | 0.12 |
| 8 | **Success HB/AC Mountainview** | 6.62 | 64.52 | 1.50 | 35.29 | 91.39 | 0.34 | 0.17 | 1.41 | 0.09 |
| 9 | **AC Knowles MB/AC Mountainview** | 7.62 | 66.46 | 1.52 | 34.25 | 97.99 | 0.45 | 0.18 | 1.77 | 0.10 |

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# GRO-Operation Pollinator


**Co-operators: Kenleigh Pasay – NW 7 58 21 W4**

GRO along with other members of ARECA umbrella collaborated together for a provincial-wide project: "Operation Pollinator". GRO sent a request for participation invitation to members. We hoped to enroll 1 producer from each county, but in the end, two producers chose to participate in this trial, one each from Westlock and Thorhild counties. The Soil Conservation Council of Canada reviewed the site and coordinated seed delivery.


Operation Pollinator aims to create a valued opportunity to promote positive environmental food production. Other benefits from the project:

- Significantly increase pollinating insect numbers
- Hugely benefit butterflies and other insects
- Improve crop yields from better pollination
- Simultaneously create habitats for small mammals and farmland birds
- Simplify field management
- Deliver soil and water protection measures
- Qualify for additional environmental payments
- Create a premium brand market to produce
- Develop strong links with retailers
- Establish more sustainable economic farming systems

**Picture Courtesy of our producer partner:**

**Kenleigh Pasay (Thorhild County)**

The other site at Westlock didn't establish well and was mowed in the end.

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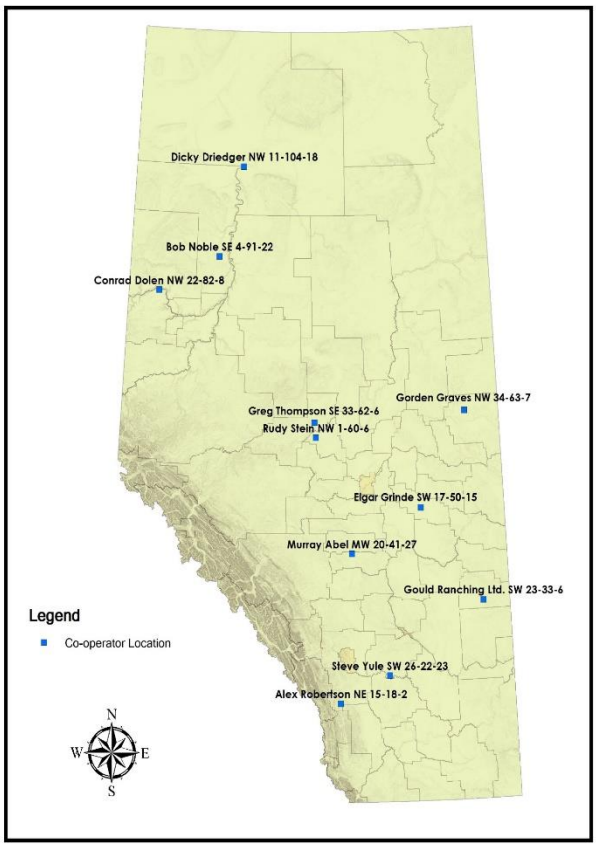
# High Legume Pasture Trial

## Co-operators: Greg & Lori Thompson – SE 33 62 6 W 5

**Years** 2016 - 2018




Project Partners:

Battle River Research Group (BRRG)
Peace River Forage Association of British Columbia (PRFABC)
Chinook Applied Research Association (CARA)
Foothills Forage and Grazing Association (FFGA)
Grey Wooded Forage Association (GWFA)
MacKenzie Applied Research Association (MARA)
North Peace Applied Research Association (NPARA)
Peace Country Beef and Forage Association (PCBFA)
Lakeland Agricultural Research Association (LARA)
West Central Forage Association (WCFA)

### Objectives:

- To determine the establishment and longevity of high legume pasture stands.
- To explore increased productivity, increased forage quality, drought aversion and nitrogen-fixing benefits within a high legume stand.
- To determine high legume pasture stands performance under grazing pressure.
- To assess bloat mitigation potential of sainfoin in pasture stands.

### Background:

The goal of the Sainfoin/Alfalfa High Legume Pasture Project was to provide agricultural producers with the opportunity and experience to establish a pasture that has over 60% legume species and then graze that pasture in the second year. In the spring of 2016, Alberta Agriculture and Forestry (AAF) initiated this project in order to increase producers' awareness of the utility of legumes in pastures. There were 11 co-operators

and 13 sites in Alberta and one site in B.C with a 60% AC Mountainview/Alfalfa and 40% grass mixture (figure above).

Member associations assisted with the seeding and visited the site many times over the two summers to monitor rainfall, assess plant health and conduct plant counts. Each contractor organized an extension event at their site during the summer of 2016. In the past, livestock producers have avoided seeding high legume pastures due to the risk of bloat. But, high legume pastures have a greater capacity to withstand drought conditions and are extremely productive. Incorporating Sainfoin, containing tannins, into the pasture mix reduces the incidence of bloat. The new Sainfoin variety AAC Mountainview is proving to compete well in a forage stand and has higher regrowth so that it regrows at the same rate as alfalfa. Livestock grazers can now use AAC Mountainview as a natural bloat control and more confidently graze higher legume pastures.

**For GRO:** The 10-acre site was seeded on 07-June-2016 using Air-drill with Flexifoil. The Site had the very poor establishment of Sainfoin / Alfalfa. The weed pressure was quite intense and therefore, as a control measure, the site was mowed again.

| Precipitation | Before June 15 | Jun 15 - Jul 15 | Jul 15 -Aug 15 | Aug 15 -Sept 15 | Total Precipitation (mm) |
|---|---|---|---|---|---|
| ***Fort Assiniboine*** | 110 | 232 | 128 | 41 | 511 |

| Site Management | Seeding Date | Seeded with Cover Crop | Mow | Weed Spray | Touch-up seed |
|---|---|---|---|---|---|
| | June 7 | N | September 16 | July 24 (Basagran) | Re-seeded |

| Date Sept 14 | Sainfoin | Alfalfa | Grass | Plants/ft2 | Rating | Weeds |
|---|---|---|---|---|---|---|
| **Plant Counts (plants per ¼ m2)Site** | **0.8** | **0.8** | **3.6** | **1.9** | **poor** | 9.6 |

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Due to poor establishment, determined by low plant count, it was decided to touch up the seeding with additional Sainfoin/Alfalfa @ 33 lbs/acre, when recommended conditions prevail.

Additional bags of seed acquired and efforts to re-seed were made. Due to unfavorable weather conditions and already delayed workload in 2017, it was decided to halt the re-seeding for 2017. Producer cooperators were determined to seed again and on 10 June 2018 the site was reseeded. The establishment was still very poor for the Sainfoin/Alfalfa.

Gateway Research Organization

# Annual alternative/Cover crops Trial

**Co-operators: Ken Anderson – NW-32-59-2-W5**

## Objectives:

- To provide regional production information on 'alternative' forage type crops in Alberta.
- To identify annual crop species/varieties that have superior forage production or quality for livestock production systems.
- To determine yield and quality differences when different seeding systems are used (**broadcast and drill**).

## Background:

Through the Regional Silage Trials, GRO and 5 other applied associations have continued to be a valuable resource for Alberta producers through current, unbiased regional information on annual cereal yield and quality for forage production. The funding from municipalities is used to conduct these trials. This trial aims to assess information on 'alternative' forages and how they compare in yield and quality to annual cereals for livestock cattle production (beef cattle, goats and sheep). The ability to assess varieties and species regionally, allows Alberta producers to make the most economic decisions for their farm's productivity and profitability.

The 'alternative' or 'high nutritive value' forages, including chicory and plantain that are known for increased energy and protein content and reduced neutral detergent fiber (NDF), in the rations of beef cattle could have an environmental, economical and production benefit to Alberta producers. Currently, research has focused on assessing the yield and quality of cocktail mixtures that contain from 2 to 20 different species with very little data available on individual species. As well, there has been limited research focusing on replicated trials to establish baseline information on these forage species. Consequently, most current recommendations to producers on the use of these crops are coming from anecdotal sources.

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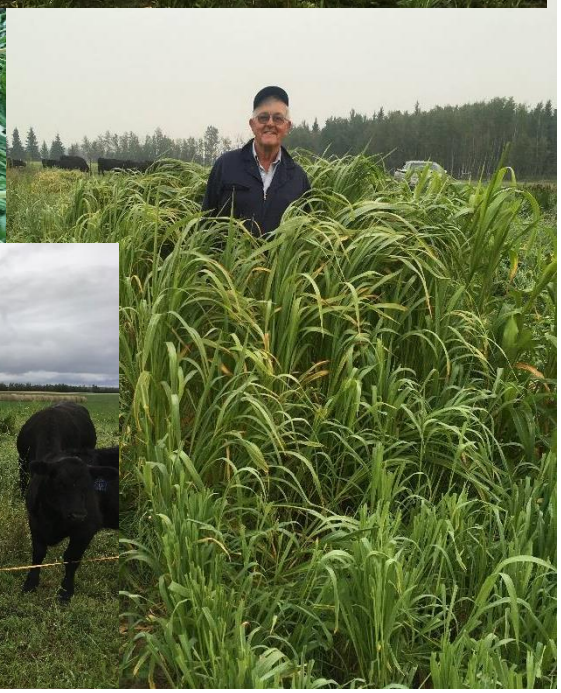
Recent research from New Zealand on the use of 'alternative' forage crops in sheep and cattle diets is showing promising results in feed intake and environmental impacts. A study on chicory and plantain has shown the potential of reduced environmental impacts of these forages through decreased rumen ammonia and urine nitrogen in dairy cattle (Minnee et al. 2017).

AT GRO, we started this pilot demo project with no replication due to lack of funding for running full research trial. However, we aim to collect as much information as possible from our demo trial so that area producers have some baseline values to make an informed decision.

| | Type of Forage | Seeding rate (lbs/Acre) | |
|---|---|---|---|
| | | Drill | For Broadcast the rate was 2 times of Drill |
| **Japanese Millet** | Warm Season Annual | 20 | 40 |
| **Proso Millet** | Warm Season Annual | 20 | 40 |
| **Red Siberian Millet** | Warm Season Annual | 20 | 40 |
| **Forage Brassica** | Cool Season Annual | 4 | 8 |
| **Radish** | Cool Season Annual | 4.5 | 9 |
| **Turnip** | Cool Season Biennial | 4 | 8 |
| **Plantain** | Cool Season Perennial | 9 | 18 |
| **Chicory** | Warm Season Perennial | 5.3 | 10.6 |
| **Phacelia** | Cool Season Annual | 7 | 14 |
| **Sorghum Sudan Grass** | Warm Season Annual | 13.5 | 27 |
| **Italian Ryegrass** | Cool Season Biennial | 6 | - |

| | Fresh cut Yield (Tonne/Acre) | |
|---|---|---|
| | Drill | Broadcast = 2 times Drill |
| **Japanese Millet** | 5.2 | 3.6 |
| **Proso Millet** | 4.9 | 3.4 |
| **Red Siberian Millet** | 5.1 | 2.2 |
| **Forage Brassica** | 4.5 | 3.9 |
| **Radish** | 8.4 | 4.1 |

| | | |
|---|---|---|
| **Turnip** | 6.8 | **12.0** |
| **Plantain** | 2.0 | 4.1 |
| **Chicory** | 1.6 | 4.9 |
| **Phacelia** | 4.5 | 3.8 |
| **Sorghum Sudan Grass** | 2.0 | 3.4 |
| **Italian Ryegrass*** | 1.9 | - |



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| | JAPANESE MILLET | PROSO MILLET | FORAGE BRASSICA | RADISH | PLANTAIN | CHICORY | PHACELIA | SORGHUM SUDAN GRASS | RED SIBERIAN MILLET | TURNIP | RYEGRASS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acid Detergent Fibre | 35.53 | 33.94 | **23.16** | 45.36 | 30.11 | 27.65 | 37.97 | 29.36 | 35.64 | 27.95 | 27.3 |
| Neutral Detergent Fibre | 55.82 | 55.96 | **28.2** | 52.27 | 36.55 | 32.06 | 49.59 | 46.89 | 59.6 | 34.26 | 42.58 |
| NDF-CP | 2.81 | 1.51 | **2.53** | 3.03 | 4.18 | 3.59 | 2.99 | 2.23 | 1.83 | 3.27 | 2.69 |
| NFC | 15.27 | 20.03 | **40.34** | 21.66 | 31.42 | 32.24 | 22.67 | 17.78 | 17.97 | 34.44 | 28.28 |
| Relative Forage Quality | 116.1 | 128.3 | **257.7** | 80.8 | **182.2** | **205.1** | 89.4 | 132.1 | 111.9 | 200.1 | 187.8 |
| Soluble Crude Protein | 36.12 | 36.76 | **36.33** | 35.68 | 36.43 | 35.79 | 35.56 | 36.34 | 36.68 | 35.96 | 36.45 |
| Crude Fat | 1.92 | 1.99 | **2.09** | 1.52 | 1.59 | 1.75 | 1.32 | 1.65 | 1.67 | 1.83 | 1.77 |
| Total Ash | 9.44 | 7.88 | **9.73** | 8.5 | 8.56 | 10.53 | 8.63 | 7.85 | 8.21 | 9.4 | 8.53 |
| Moisture | 7.41 | 6.4 | **6.35** | 6.26 | 7.71 | 7.99 | 7.04 | 17.54 | 6.53 | 6.5 | 7.11 |
| Chloride | 0.61 | 0.59 | **0.46** | 0.48 | 0.46 | 0.5 | 0.3 | 0.54 | 0.64 | 0.46 | 0.55 |
| Lysine | 0.39 | 0.2 | **0.44** | 0.28 | 0.51 | 0.51 | 0.28 | 0.25 | 0.13 | 0.31 | 0.37 |
| Calcium | 0.75 | 0.56 | **1.51** | 1.39 | 1.29 | 1.55 | 1.34 | 0.54 | 0.35 | 1.8 | 0.84 |
| Methionine | 0.16 | 0.08 | **0.17** | 0.12 | 0.17 | 0.19 | 0.12 | 0.1 | 0.06 | 0.13 | 0.15 |
| Potassium | 2.43 | 1.86 | **2.09** | 2.21 | 1.89 | 2.37 | 1.73 | 2.02 | 2.27 | 2.15 | 1.97 |
| Magnesium | 0.16 | 0.13 | **0.22** | 0.17 | 0.29 | 0.27 | 0.25 | 0.15 | 0.13 | 0.24 | 0.15 |
| Sodium | 0.03 | 0.02 | **0.04** | 0.04 | 0.04 | 0.05 | 0.05 | 0.02 | 0.02 | 0.05 | 0.03 |
| NDFD (24Hr) | 39.96 | 43.37 | **43.43** | 27.96 | 35.94 | 37.58 | 31.48 | 43.35 | 40.56 | 34.47 | 44.32 |
| NDF Dissapearance Rate | 3.00 | 3.28 | **5.97** | 2.8 | 2.91 | 2.94 | 2.6 | 3.0 | 2.9 | 3.01 | 3.65 |
| ADF-CP | 0.35 | 0.52 | **0.29** | 0.79 | 1.38 | 0.77 | 1.03 | 0.61 | 0.31 | 1.11 | 0.48 |
| UIP (Bypass Protein) | 29.28 | 30.47 | **25.63** | 33.8 | 26.97 | 27.66 | 35.68 | 30.64 | 31.76 | 27.96 | 33.11 |
| Crude Protein | 10.14 | 7.73 | **13.3** | 9.79 | 14.18 | 15.44 | 10.75 | 8.3 | 6.02 | 13.58 | 11.73 |
| Dry Matter | 92.59 | 93.6 | **93.65** | 93.74 | 92.29 | 92.01 | 92.96 | 82.46 | 93.47 | 93.5 | 92.89 |

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| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Digestible Nutrients** | **55.88** | **59.16** | **67.73** | **47.64** | **62.59** | **62.57** | **48.72** | **52.16** | **55.96** | **64.07** | **65.9** |
| **NE Gain** | 0.65 | 0.7 | **0.95** | 0.45 | 0.77 | 0.82 | 0.6 | 0.63 | 0.66 | 0.83 | 0.85 |
| **Net Energy Gain** | 0.65 | 0.7 | **0.96** | 0.43 | 0.78 | 0.83 | 0.59 | 0.63 | 0.66 | 0.84 | 0.85 |
| **NE Lactation** | 1.23 | 1.28 | **1.49** | 1.07 | 1.33 | 1.37 | 1.19 | 1.14 | 1.25 | 1.39 | 1.39 |
| **Net Energy Lactation** | 1.26 | 1.34 | **1.55** | 1.06 | 1.42 | 1.43 | 1.08 | 1.18 | 1.26 | 1.46 | 1.5 |
| **NE Maintenance** | 1.31 | 1.38 | **1.62** | 1.12 | 1.43 | 1.48 | 1.27 | 1.23 | 1.34 | 1.51 | 1.51 |
| **Net Energy Maintenance** | 1.18 | 1.24 | **1.52** | 0.95 | 1.32 | 1.37 | 1.12 | 1.11 | 1.2 | 1.39 | 1.4 |
| **Relative Feed Value** | 91.05 | 94.36 | **215.15** | 85.42 | 149.12 | 174.86 | 99.53 | 100.06 | 86.37 | 166.6 | 133.95 |
| **Starch** | 4.06 | 4.27 | **3.67** | 4.43 | 1.02 | 1.98 | 2.66 | 3.13 | 4.58 | 2.83 | 3.1 |
| **Lignin** | 3.70 | 3.34 | **4.69** | 8.31 | 3.46 | 2.63 | 5.47 | 1.73 | 3.13 | 3.95 | 3.29 |
| **NDFD (48Hr)** | 58.55 | 62.7 | **59.32** | 37.9 | 54.9 | 54.57 | 39.56 | 61.57 | 60.02 | 56.44 | 68.06 |
| **Phosphorus** | 0.27 | 0.18 | **0.13** | 0.16 | | 0.17 | 0.15 | 0.22 | 0.18 | 0.09 | 0.25 |

Extending the grazing season for cattle can help reduce production costs and there is a long list of forage choices that can help achieve the goal of adequate fall grazing, and even can often be extended into winter. Annual forages are commonly used for hay, silage or for soil amendment, or even grazing as pasture, to complement perennial forage production. Additional research comparing 'alternative' crops to commonly grown annual cereals would increase the variety-specific information available and benefit the agriculture industry in Alberta and the rest of western Canada by improving farm and ranch productivity and profitability. GRO is working on securing funding to continue the full research trial and allow us to provide valuable information for the area producers.

**Cool FACT:** Plantain, a cool-season perennial broadleaf forb with high sugar also has **natural deworming** and **antibiotic properties**.

## Hay/Silage quality Demo

### Co-operators: Maurice Kruk –NE-3-59-20-W4

Cooperator producer chose two different type of grasses and ran a small experiment to understand if they fit his operation. The grasses were:

| Name | *Scientific name* | Life span | Origin | Grazing response | Forage value |
|---|---|---|---|---|---|
| Hybrid Brome grass | *(Bromus riparius Rehm.×Bromus inermis Leyss.* | Perennial | Introduced | Invader | Good |
| Reed canary grass | *Phalaris arundinacea* | Perennial | Native/Introduced | Increaser/Invader | Good |

Source: https://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex146

**Hybrid brome grass –** is a dual purpose hay-pasture type of grass, producing high first-cut hay yields like smooth brome grass and good regrowth following cutting or grazing, similar to meadow brome grass.

Hybrid brome grass adaptation is similar to smooth brome-grass and is adapted to the Gray Wooded, Black and Dark Brown soil zones of Alberta. Hybrid brome grass is a long-lived grass, with productive stands up to ten years. Winter hardiness is good.

Hybrid brome grass produces more seed heads than meadow brome grass after the third year, which makes it a bit stemmier as a pasture grass than meadow brome grass in more mature stands. It has slower regrowth than meadow brome grass but quicker than smooth brome grass.

**Reed canary grass –** is a long-lived perennial grass. It is very well adapted and is very productive to wet sites or poorly drained soils subject to prolonged flooding or around

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permanent sloughs. It is also adapted to dryland in the Gray Wooded and Black soil zones. Reed canary grass is used mainly for hay but is also very suitable for pasture and controlling water erosion.

Reed canary grass is well suited to a two-cut hay system. The second cutting yields much less than the first cutting and is often grazed. Stems are leafy, coarse, erect and up to 2 m (6 1/2 ft.) or more up to 7 ft in height when headed. Stems become coarse and fibrous as they mature so that quality and palatability decrease quickly with advancing maturity

Alkaloids in the plant have caused lower animal performance than the nutritional composition of the plant suggests. Researchers in New Zealand have noted that sheep have exhibited *Phalaris staggers*, which includes distress, convulsions, and death. The newer varieties of reed canary grass have been developed with reduced alkaloid levels, which avoids some of the issues associated with them.

GRO did a small experiment with these two kinds of grass to determine their role in Hay/silage production, as well as grazing. In 2018, the harvest was about 3 weeks late for the fresh cut hay, and also when it should have been ideally hayed and cut for silage. The Reed canary grass already started to head at the time of the cut. We aim for an early cut next year and will analyze for nutrition and quality.

| | HEAVY BROME GRASS | | | REED CANARY GRASS | | |
|---|---|---|---|---|---|---|
| Nutritional analysis. | Fresh | HAY | SILAGE BALES | Fresh | HAY | SILAGE BALES |
| Acid Detergent Fibre | 22.11 | 35.6 | 26.46 | 29.78 | 36.51 | 26.5 |
| ADF-CP | 0.69 | 1.4 | 0.96 | 0.59 | 0.93 | 0.92 |
| Calcium | 0.22 | 0.38 | 0.28 | 0.24 | 0.31 | 0.26 |
| Chloride | 0.35 | 0.09 | 0.31 | 0.4 | 0.16 | 0.4 |
| Copper | 2.93 | 6.2 | 3.42 | 4.25 | 5.43 | 3.89 |
| Crude Fat | 3.41 | 1.08 | 1.02 | 3.56 | 1.25 | 0.92 |
| Crude Protein | 5.6 | 7.66 | 7.4 | 6.95 | 7.23 | 6.7 |
| Dry Matter | 59.67 | 82.86 | 63.98 | 69.96 | 85.92 | 61.66 |
| Iron | 38.58 | 77.64 | 55.89 | 41.98 | 56.28 | 91.23 |
| Lignin | 3.41 | 6.64 | 5.02 | 3.56 | 6.38 | 4.83 |
| Magnesium | 0.07 | 0.11 | 0.08 | 0.13 | 0.1 | 0.08 |
| Manganese | 68.82 | 32.33 | 18.99 | 10.46 | 27.03 | 22.28 |
| Moisture | 40.33 | 17.14 | 36.02 | 30.04 | 14.08 | 38.34 |
| NDF-CP | 2.35 | 3.73 | 2.74 | 1.99 | 3.06 | 2.84 |
| NE Gain | 0.44 | 0.5 | 0.41 | 0.43 | 0.52 | 0.37 |
| NE Lactation | 0.81 | 1.03 | 0.81 | 0.87 | 1.07 | 0.76 |
| NE Maintenance | 0.87 | 1.09 | 0.87 | 0.93 | 1.14 | 0.81 |
| Net Energy Gain (Weiss) | 0.44 | 0.49 | 0.4 | 0.43 | 0.52 | 0.36 |
| Net Energy Lactation (Weiss) | 0.92 | 1.05 | 0.84 | 0.89 | 1.03 | 0.8 |
| Net Energy Maintenance (Weiss) | 0.78 | 0.95 | 0.77 | 0.82 | 1.01 | 0.71 |
| Neutral Detergent Fibre | 36.38 | 52.88 | 40.07 | 47.74 | 57.15 | 37.89 |
| NFC | 9.73 | 16.28 | 10.98 | 5.72 | 15.08 | 11.83 |
| Phosphorus | 0.07 | 0.11 | 0.08 | 0.08 | 0.09 | 0.08 |
| Potassium | 0.94 | 0.88 | 1.09 | 0.97 | 0.82 | 0.99 |
| Relative Feed Value | 91.6 | 80.79 | 84.19 | 75.98 | 78.04 | 83.91 |
| Sodium | 0.01 | 0.02 | 0.01 | 0.01 | 0.03 | 0.02 |
| Soluble Crude Protein | 36.55 | 37.09 | 36.81 | 36 | 37.06 | 36.74 |
| Starch | 1.61 | 0.83 | 0.88 | 2.56 | 1.42 | 0.96 |
| Sulphur | 0.11 | 0.17 | 0.15 | 0.34 | 0.27 | 0.2 |
| Total Ash | 4.55 | 4.96 | 4.5 | 5.98 | 5.22 | 4.33 |
| Total Digestible Nutrients (Weiss) | 40.42 | 47.01 | 37.58 | 39.71 | 46.28 | 35.44 |
| UIP (Bypass Protein) | 41.1 | 41.31 | 38.16 | 35.6 | 41.62 | 39.23 |
| Zinc | 21.61 | 29.84 | 30.35 | 34.06 | 41.69 | 32.4 |

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# Pest Monitoring & Disease Survey

## Partner:

Producers from Counties of **Westlock**, **Barrhead, Woodlands,** and **Lac Ste Anne**.
Shelley Barkley, Alberta Agriculture

The Gateway Research Organization (GRO) participated in the Prairie Pest Monitoring Program in 2018. The objective of the Prairie Pest Monitoring Program is to develop an early warning system for crop pests, with emphasis on insects and disease. Being forewarned means that scouting, information workshops, and control operations can be carried out in the affected areas before crop losses occur. Last year, GRO surveyed for diamondback moth, bertha armyworm, Cabbage Seedpod weevil, and Wheat Midge.

**Diamondback Moth –** Two pheromone traps on the edge of a canola field in Westlock County and Barrhead County were used to monitor adult diamondback moth populations from May 06 to June 16.

**Bertha Armyworm –** One pheromone traps on the edge of a canola field in Westlock County and one at Lac Ste. Anne County was used to monitor bertha armyworm moth populations from June 17 to July 28.

Traps were checked weekly and moth counts, along with counts from other locations, were used to generating forecast maps and assess the risk of a larval outbreak. These maps were updated daily and can be accessed on Alberta Agriculture, Food and Rural Development's website. In 2018, these counts indicated a low risk for a larval outbreak and therefore no larval surveying was completed.

**Cabbage Seedpod Weevil –** was first found infesting canola in southern Alberta in 1995, since then, the weevil has spread to south-central Alberta and southwestern

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Saskatchewan. The distribution and abundance of the cabbage seedpod weevil have been monitored yearly in western Canada since 1997. In 2018, GRO collected Canola Sweeping samples from Westlock, Barrhead, and Woodlands counties. The information about the Cabbage Seedpod Weevil Forecast map can be found on **Alberta Agriculture's website.**

**Wheat Midge Survey –** The 2018 fall survey included wheat growing areas throughout Alberta. In total 315 samples were taken from 63 counties. GRO was involved in taking soil samples from wheat fields after harvest using a standard soil probe. The samples were taken from Westlock, Barrhead and Woodlands counties. The **wheat midge forecast** for 2019 shows an overall low level of wheat midge across Alberta. In our area, the levels were low and this may be partially due to the use of midge tolerant wheat.

# FEAP and On-Farm Solar Outreach

**Amber Kenyon**

## Summary

Starting in May, Amber Kenyon took over the position of Farm Energy Outreach Officer in northern Alberta for Gateway Research Organization. Throughout the course of the year, the program has been gaining traction in the agricultural communities in the region. Amber spent May to July in training and attending several events. She presented at the Organic Crop Improvement Association AGM, the MARA crop tour and the Grande Prairies ASB Meeting in this time. These sessions and the trade shows had her speaking about the program to quite a few producers who were not aware that funding is available. Amber also started delivering brochures on the FEAP program to interested businesses in the towns that she was passing through. These included businesses like UFA, Peavey Mart, and Home Hardware, with the end goal that they would let customers purchasing funded equipment know that they could apply to the program. August and September saw a slow down in events, as producers were looking to start the harvest. In that time the focus turned to plan events for the winter and writing articles for the GRO blog. She presented at the Farm Energy Efficiency Workshop and the Barrhead ASB Meeting. Starting in October her schedule really started to pick up with an average of eight events a month up until the end of January. In this time the phone was ringing a lot more frequently with questions about both the FEAP and the On-Farm Solar programs as well.

Overall there were 19 speaking opportunities and 12 trade shows attended from May 15 to January 31. There were 12 events attended with the goal of speaking one on one with producers while networking. There were also a few articles written for the Gateway Research Organization blog, which were shared multiple times on social media with positive feedback and interaction. Amber also created a video presentation that was shared at an energy workshop in Manning and has since been shared with Alberta Agriculture and Forestry.

## Speaking Opportunities

Below is a chart outlining all the speaking opportunities throughout the year. For a complete report on how the events went and the types of questions received, see GRO's stakeholder engagement table in sharepoint.

Overall speaking events were well received with an average of 30 people being reached at each one. Some of the most successful events were achieved through collaboration with other organizations trying to reach the same audience and events that involved the expertise of all of the outreach officers. Having more speakers seems to be the most successful, because it offers more perspectives, and allows for a longer, more comprehensive event that may make the effort to come more worthwhile for producers. Interest in both the FEAP and the On-Farm Solar PV Programs has increased since May.

| Event | Location | Date | # of people |
|---|---|---|---|
| Envirothon | Edson | May 24 | 24 |
| OCIA AGM | Westlock | Jun 9 | 30 |
| MARA Crop Tour | Ft Vermilion | Jun 22 | 40 |
| GP ASB Meeting | Grande Prairie | Jul 6 | 15 |
| Energy Efficiency Workshop | Ferintosh | Sep 7 | 20 |
| Barrhead ASB Meeting | Barrhead | Sep 11 | 15 |
| EFP Workshop | Leduc | Oct 24 | 35 |
| Peace Region ASB Conference | Fairview | Oct 30 | 60 |
| Lac Ste Anne Solar Workshop | Gunn | Nov 7 | 48 |
| Potato Growers AGM | Edmonton | Nov 14 | 50 |
| Athabasca Solar Workshop | Athabasca | Nov 20 | 20 |
| Energy Endurance Series | Athabasca | Nov 28 | 40 |
| FBC Seminar | Rollyview | Dec 5 | 12 |
| Alternative Energy Workshop | High Prairie | Dec 10 | 30 |

| | | | |
|---|---|---|---|
| Alternative Energy Workshop | Fairview | Dec 11 | 25 |
| Energy Endurance Series | Drayton Valley | Dec 12 | 30 |
| On Farm Energy Workshop | Halkirk | Dec 13 | 50 |
| Women in Farming Workshop | Thorhild | Jan 7 | 20 |
| Solar Workshop w/ SESA | Wetaskiwin | Jan 22 | 20 |
| **Total Events:** | **19** | **People Reached** | **584** |

## Tradeshows

The chart below outlines the 12 tradeshows attended in the last year. For a full report, see GRO's stakeholder engagement table in sharepoint.

| Event | Location | Date | # of Attendees |
|---|---|---|---|
| Climate Express | Grande Prairie | Jun 8 | 17 |
| Ranching for Profit | Brownvale | Jun 12 | 25 |
| Busby Pasture Walk | Busby | Jul 7 | 20 |
| SARDA Field School | Falher | Jul 19 | 25 |
| Agri-Trade | Red Deer | Nov 8 | 500 |
| Green Industry Show | Edmonton | Nov 15 | 100 |
| JEDI Ag Forum | Wetaskiwin | Nov 23 | 60 |
| Prairies North Farm Forum | Mayerthorpe | Nov 29 | 60 |
| Rural Mental Health Dinner | Breton | Dec 6 | 60 |
| Organic Alberta Conference | Ft Saskatchewan | Jan 25-26 | 300 |
| Farm Tech | Edmonton | Jan 29-30 | 500 |
| ALUS Open House | Sangudo | Jan 31 | 10 |
| Total Tradeshows: | 12 | | |

## Phone calls, emails, and publications

Apart from speaking engagements and tradeshows, the majority of efforts were spent working one on one with producers, answering their questions through phone calls and

emails. The phone calls and emails increased throughout the year as word spread about the funding opportunities available.

## Conclusion: What's been going well, and what hasn't?

Overall the program has and is being well received. The number of applications being processed has increased. We now have a full team of outreach officers and Katherine Rogers with Agriculture and Forestry stepped into the role of Outreach Coordinator since May. This has helped with communication between the outreach officers and Alberta Agriculture and Forestry. Working with the ARECA groups and other climate groups have been particularly effective in getting information about the programs out to producers in northern Alberta.