

ADVANCING AGRICULTURE AS AN
INDEPENDENT PRODUCER-DRIVEN RESOURCE

Battle River
Research Group
Annual Report 2018



BATTLE RIVER RESEARCH GROUP

The Battle River Research Association (BRRG) came into existence after the amalgamation of the Battle River Forage Association and the Battle River Applied Research Association in 1993. We are located in Forestburg, Alberta, allowing us to easily serve the east-central region of Alberta.

Area We Serve

The area served by the Battle River Research Group is a transition zone between the Aspen Parkland ecoregion to the north and the Moist Mixed Grassland to the south. The Aspen Parkland is characterized by fertile Black Chernozemic soils; with short warm summer, continuous snow cover throughout winter and moderate annual precipitation. (400-500mm). The Moist Mixed Grassland is characterized by Dark Brown Chernozemic or Solonchic soils, and has semi-arid moisture conditions with annual precip. of 350-400mm.

We are proud to serve the counties of Paintearth, Stettler, Camrose, Beaver and Flagstaff.

Helping our Producers

The Battle River Research Group has three programs to help serve the local producer. Our Field Crops Program does numerous applied research trials yearly. These include small plot trials like variety trials to larger field scale trials. The field crop program focuses on cereals, oil seeds and pulse crops that can be grown in east-central Alberta. We also showcase best management practices (BMP) throughout the year with various extension events. Our Forage and Livestock program consists of applied research trials focusing on feed stuffs, demonstration projects that showcase BMP's as well as other topics related to forage and livestock. The Extension & Environmental Program plans extension events, from small local events to larger events like the Grazing School For Women or the Western Canadian Soil Health & Grazing Conference. The environmental program focuses on reducing the impact that agriculture has on the environment and uses applied research, demonstration projects and extension events to help achieve our goal. We also assist producers with Environmental Farm Plans and provide information on the new CAP Funding.

Vision: BEYOND SUSTAINABILITY THROUGH INNOVATION IN AGRICULTURE.

Mission: ADVANCING AGRICULTURE AS AN INDEPENDANT, PRODUCER-DRIVEN RESOURCE.



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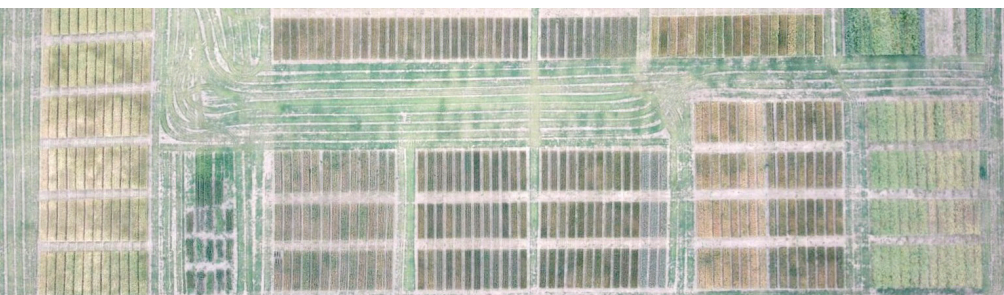
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PRESIDENT'S REPORT

Battle River Research Group is committed to improving agriculture through producer driven research and providing extension events to farmers in our region. We aim to teach farmers new ideas and techniques that they can utilize to make their operations more sustainable

Our Board of Directors have worked diligently in the past year to evolve BRRG so that we can support agriculture in the future. This has involved many changes in the last year. It is with great excitement that we have brought Khalil Ahmed on as our General Manager and Crops Research Coordinator. He brings a wealth of experience in crop research, and comes with numerous ideas that we aim to implement in the coming years.

Martina Alder has shown her strength in coordinating our extension events. These events allow us to draw on our vast network of knowledgeable speakers to bring new ideas and insight into our region. We aim to expand our collaborations with government, industry, grains commissions, and other Applied Research Associations throughout Alberta. By working together we will be able to develop and provide invaluable services and information to farmers.

Myself and the other directors look to 2019 with great optimism for BRRG and farming in general. I would like to thank all of our supporters and look forward to working with you in the coming year.

Blair Kuefler
Board of Directors President



WELCOME NEW MANAGER KHALIL AHMED PH.D. PAg

Khalil began with the Battle River Research Group in August of 2018 as our new Manager and Crop Research Coordinator. Khalil's key research interests are sustainable agriculture and protecting the environment. He has more than eight years of research experience; holding a PhD in Agriculture and a Diploma in Environmental Sciences from NAIT Edmonton. Before BRRG, Khalil joined SARDA Ag Research as an environmental coordinator and was promoted to a research coordinator.

In the past he has worked in the fertilizer industry in Pakistan, at the Agricultural Institute of Malaysia and at Integrated Crop Research Management Services in Fort-Saskatchewan.

He has published his research in various refereed journals and newsletters, and has presented in many conferences. His publications include 11 reviewed research papers, 15 proceedings, one book chapter, and several reports and articles.

Apart from work, he enjoys playing cricket, and tennis, watching documentaries and watching YouTube videos on how to repair things.



*Khalil Ahmed Ph.D P.Ag
Manager*



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MARTINA'S YEAR IN REVIEW

2018 was another fun ride here at the Battle River Research Group. This year will be my 3rd year working for the BRRG, and I can say its been nothing short of exciting as I have rolled with the punches along the way. In 2018 I had a unique opportunity to be an interim Manager at the BRRG for 6 months until we found a permanent replacement. I learned a lot and enjoyed my time in "power", but I am happy we have found Khalil as our permanent Manager & Crops Coordinator. I love my position as Extension & Environmental Coordinator and am happy to be back coordinating events for our membership and area farms and ranchers to attend. Khalil and I always joke that he just has the title, but I am still the "boss" ha-ha. I look forward to 2019 and all it will have to offer for our organization.

*Martina Alder
Environmental & Extension Coordinator*

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(Left to right) Back: Rob Sommerville, Dave Grover, Steven Vincett, Elgar Grinde, Henry Micheielsen, Blair Kuefler, Ryan Hallett
Front: Melvin Thompson, Doreen Blumhagen, Dale, Pederson, Brent Christensen Missing: Colin Wager

Battle River Research Group 2018 Staff

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August 2018



Martina Alder
Extension & Environmental
Program Coordinator
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Sarah Hall
Crops Program Coordinator
April 2017 - June 2018



Summer Staff

- Jessica Norman
- Garth Eyolfson
- Brent Puchalski
- Colt Holowath

Thank you for your hard work throughout the season in helping with the research trials and extension events.

ACKNOWLEDGEMENTS



Thank You

To the counties of Beaver, Camrose, Flagstaff, Stettler and Paintearth for your financial support and advice

The work conducted by the Battle River Research Group is the result of support by many individuals and groups. We have highlighted many of these on the next page. Further thanks go to:

Major Funding Agencies

Agricultural Opportunity Fund (AOF)

BRRG Field Crop Sponsors

Canola Council of Canada
Alberta Canola Producers Commission
Alberta Wheat Commission
Alberta Barley Commission
Alberta Pulse Growers



Agriculture and
Agri-Food Canada



Agriculture and Agri-Food Canada (AAFC)

AB Agriculture & Forestry (AF)

Agriculture Opportunity Fund (AOF)

Agricultural Research and Extension Council of Alberta (ARECA)

PROJECT SPONSORS AND SUPPORT

Industry and Producer Commissions

Alberta Barley Commission
Alberta Beef Producers
Alberta Canola Producers Commission
Alberta Wheat Commission
Alberta Pulse Growers
Canola Council of Canada

Agri-Business & Collaborators

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Richardson Pioneer - Forestburg
Battle River Railway
Canadian Humalite International
Alberta Conservation Association
Alberta Woodlot Extension Council
Battle River Community Foundation

Alberta Agriculture & Forestry

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Neil Whatley
Barry Yaremci
Karin Lindquist
Clair Langouis

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Dr. Surya Acharya
Dr. Vern Baron

Seed and Other Support:

Performance Seed
Forestburg Seed Cleaning Plant
James Anderson
Solick Seeds - Len Solick
Sounding Creek Seeds - Curtis Hoffmann
Central Testing Labs
Exova
Sponsoring seed companies of variety testing program

Co-Operators

Darrell Holmstrom-Killam
Kevin James-Castor
Dean Erickson-Forestburg
Elgar Grinde-Holden
Flagstaff County

Tour and Workshop Support

Stettler County - Quinton Beaumont & Ryan Hallett
Flagstaff County - Kelsey Fenton
Paintearth County - Trevor Kerr
Beaver County - Aimee Boese
Camrose County - Mark Millang & Bettina van Nieuwkerk
Flagstaff Community Bus
Battle River Watershed Alliance
Cows & Fish
Grazing School for Women Committee

Associations & Societies

Chinook Applied Research Association
Smokey Applied Research & Demonstration Association
Mackenzie Applied Research Association
Gateway Research Organization
Grey Wooded Forage Association
Foothills Forage and Grazing Association
Peace Country Beef and Forage Association
Lakeland Agriculture Research Association
North Peace Applied Research Association
Farming Smarter

We apologize to anyone we unintentionally omitted.

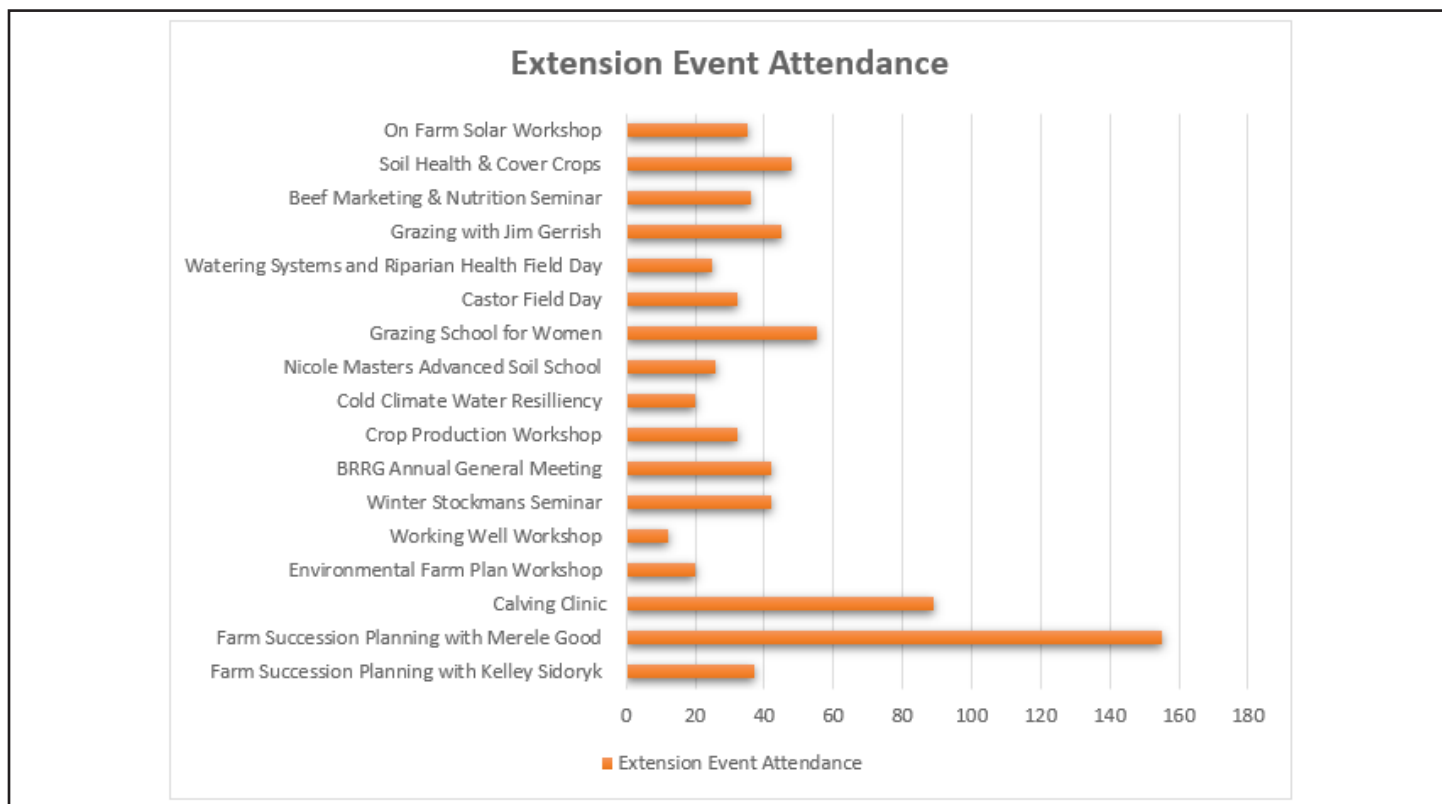
Extension Events 2018



2018 was a fantastic year for Extension Events, we hosted 17 events throughout 2018 which covered; livestock care, nutrition, calving, farm succession, riparian health, plant ID, on farm solar, soil health, and many more! We had an average of 44 people attend our events this year with a total of 751 people attend our 2018 events in total. We also saw a few record high attending events for us one of which being our Farm Succession Planning with Merle Good in Brownfield which drew 155 area farmers and ranchers as well as our second highest attendance for the year being our Calving Clinic in brownfield which brought in 89 producers. We are looking forward to 2019 to see what kind of records we can break in the new year.

In addition to coordinating and planning events the Extension Coordinator also puts together many publications and posters/post cards including this Annual Report and the quarterly newsletter “Over the Fenceline” which gets sent to all farm mail boxes in the Counties of Paintearth, Beaver, Camrose, Flagstaff and Stettler. This increase in attendance is thanks to the post cards we now send out with up coming events info on them, at events we hand out evaluations and roughly 75% of the attendees knew of the event from these post cards! It is nice to know that the effort that goes into making and mailing those cards out is being rewarded with greater attendance at events!

2018 EXTENSION EVENT HIGHLIGHTS



Farm Succession Planning with Kelly Sidoryk – January 10 – Holden

We had a great attendance of 37 eager farm families at the Holden Community Hall who wanted to start the conversation on Farm Succession Planning. Kelly led the day doing different activities and exercises with the families in order to prepare to start the conversation of Farm Succession Planning. We partnered with Beaver County to make this day possible.

Farm Succession Planning with Merle Good – January 29 – Brownfield

We hosted Merle Good at the Brownfield Community Center in conjunction with the County of Paintearth and The Friends of the Brownfield Community Library. We had an amazing turnout of 155 farm families many from the Brownfield and surrounding area. We had a catered dinner and then Merle Good with GIS Consulting spoke for the evening on Farm Succession Planning. The crowd really enjoyed him and how he was very personable, we also took time at the end for questions from individuals which really sparked great conversation between the crowd.

Winter Stockman's Seminar – February 8 – Stettler

This event was put on in conjunction with the Stettler County at the Stettler Agri-Plex. We had 4 different speakers throughout the course of the day including: Doug Wray speaking on his experience on Year-Round Grazing, Elgar Grinde on his perspectives on different feeding methods, Dr. Ben Schultz from Maverick Large Animal with an update on Antimicrobial Regulation Changes, followed by Bob Thompson with Ducks Unlimited speaking on their programs and Riparian Health. It was a well attended day of 42 farmers and ranchers in attendance.

2018 EXTENSION EVENT HIGHLIGHTS

Calving Clinic – February 13 – Brownfield

Together with The Friends of the Brownfield Community Library, we hosted our second semi-annual Calving Clinic, open to all farmers/ranchers. As with our last Calving Clinic this one too was a great success which brought out 89 farmers from the area to an evening clinic. We had dinner then began with Dr. Jeff Serfas speaking on Neonatal Care and then later Dr. Tamara Quaschnick speaking on Bovine Obstetrics. Dr. Quaschnick also did some calf pulling demonstrations on a life like plastic cow with a life size calf (“Bessie & Bart”). It was perfect for demonstrating different techniques for pulling calves as well as an opportunity to include the crowd in the presentation. Also, at the Calving Clinic we had 9 trade show vendors show up with different farm/ranch related products to show case for the producers in attendance. The whole evening went over well and was enjoyed by all.

Working Well Workshop – February 20 – Stettler

We had evening presentation from the Working Well program together with The Stettler County at the Stettler County Administration Building. The county provided a light supper after which an Alberta Health Services representative came to speak on how to keep your well flowing well with clean water your family can enjoy for years. Also, proper construction, maintenance of wells and testing of drinking water was discussed.

Environmental Farm Plan Workshop – February 26 – Consort

We co-hosted an Alberta Environmental Farm Plan Workshop with the Chinook Applied Research Association in Consort, AB. The workshop took place at the Neutral Hills Learning & Community Centre starting in the morning with producers starting new EFP’s and in the afternoon assisting producers in updating outdated EFP’s. Murray Warnke (AF/EFP) and Lacey Gould (CARA) led the presentations while Olivia Sederberg (CARA) and Martina Alder (BRRG) went around to assist producers with their workbooks.

Annual General Meeting – March 1 – Galahad

This year we hosted our Annual General Meeting in Galahad with a fantastic attendance of 42 people. We began the afternoon with our AGM duties including an introduction by our chair Blair Kuefler a review of 2017 by Martina & Sarah. We finished off with adding a couple new members to our board: Brent Christensen from Beaver County and Ryan Hallett the Asst. Ag Fieldman with the County of Stettler. We then had a delicious dinner followed by some entertaining comedy by Alberta’s very own Kevin Stobo.

Holistic Land Design for Water Resiliency Workshop – March 6 – Brownfield

Our final workshop of our series with The Friends of the Brownfield Community Library was again at the Brownfield Rec Center where we had Takota Kohen come talk to 20 eager to learn farmers and ranchers. He discussed Holistic Land Design for Water Resiliency while covering topics such as: Principals of Water Harvesting, Dugout and Dam design and placement, Aquaculture and more. After the workshop there was a Dinner and social for those who were interested. There was a great turnout for this niche workshop and those who attended were happy with the info they walked away with.

2018 EXTENSION EVENT HIGHLIGHTS

Crop Production Workshop – March 22 – Forestburg

We hosted our 7th annual Crop Production Workshop at the Forestburg Community Hall. We had 5 great speakers consisting of: Neil Whatley speaking on Fusarium Head Blight, Mark Olson speaking on Pulses and Soil Health, Alisa Donnelly speaking on the Climate Fieldview program and David Simbo speaking on Nutrient Management Planning for higher yields and soil sampling, interpreting soil test results. Our Key Note Speaker for the event was Derek Squair speaking on the current Grain Markets. It was a well attended workshop of 32 producers in attendance.

Advanced Soil School with Nicole Masters – June 4,5 – St. Paul

On June 4&5 we had the opportunity to collaborate on hosting a 2-day Advanced Soil School with Nicole Masters in St. Paul along with the Lakeland Agriculture Research Association. She covered many topics such as: Enhancing the carbon, nitrogen and water cycles, sources of carbon, soil minerals and role of major nutrients, mineral and microbial synergy and more! There were 26 interested producers in attendance.

The Original Grazing School for Women – June 12, 13 – Two Hills

This year the grazing school was held in the county of Two Hills. The topics on the first day covered: Flooding, Wetland policy, Riparian projects, AI demonstration, Supper, Building bee boxes, Beer/wine tasting. Day 2 consisted of a mini “Calving Clinic”, presentation from a beef nutritionist, end the day with Mental Health and Succession Planning. There were over 50 farm and ranch women in attendance. We continue to partner on this event year after year with other counties in the area of east central Alberta.

Castor Field Day – July 19 – Castor Plot Location

We had our Annual field day crop tour at our research plots near Castor. We had 32 producers, industry and government attend the nice sunny day. We began with Rob Dunn talking about our Cover Crop demonstration as well as grain intercrops and annual covers. We then had Kelly Turkington speak on Key Strategies for Plant Disease Management. After our field lunch and networking, we listened to Yadeta Kabeta speak on Selecting Barley Varieties for Forage Production. Last but not least Claire Lagoius spoke on our seeding date/rate trial we did together.

Watering Systems and Riparian Health Field Day – July 24 – Battle River near Brownfield

Last summer we collaborated with the Battle River Watershed Alliance on a field day on the Battle River near Brownfield. It was a great day attended by 25 area farmers and ranchers. We were stationed at a private campground on the bank of the battle river where we were able to see off site watering demos from a few different solar companies as well as frost free nose pumps. Cow’s & Fish did a plant ID walk along the river with the producers prior to lunch while also identifying the importance of riparian health. After lunch we had 2 water specialists from Alberta Ag speak on dugout, spring & well development.

2018 EXTENSION EVENT HIGHLIGHTS

Grazing with Jim Gerrish – August 13 – Bindloss

BRRG was able to cohost with the Chinook Applied Research Association to bring Jim Gerrish to our area in August at the Bindloss Community Hall. Jim spoke for the day on Grazing basics, managing costs, matching forage and livestock resources. In the afternoon we also had a field session with Jim where we went to a local producer's pasture to do some hands-on learning.

Beef Marketing & Nutrition Seminar – October 18 – Stettler

Together with the County of Stettler and Flagstaff County we were able to put on an informative day for area producers. We hosted 36 ranchers and had a great line up of speakers. First, we had Anne Wasko who spoke about the current beef markets, Barry Yaremicio speaking on the low winter feed supply and the new feed calculator, Courtney O'Keefe on how to read and utilize your feed tests and Dr. Josh speaking on the drug dispensing laws coming into effect December 1, 2018.

Soil Health & Cover Crops 101 with Kevin Elmy – December 12 – Irma

On December 12, 2018 we hosted Kevin Elmy for the afternoon in Irma for a meeting farmer with an interest in Soil Health. Kevin spoke for the afternoon to 48 farmers about Soil Health, Cover Crops and Soil Biology.

On Farm Energy Workshop – December 13 – Halkirk

For our final event of 2018 we partnered with the County of Paintearth to bring an On-Farm Energy Workshop to the Halkirk Community Hall. We had 35 farmers and ranchers in attendance to learn about Energy Efficiency and Solar on Farms, different CAP funding opportunities available to producers as well as on farm grid solar and solar water pumping for producers and their livestock.





Environmental Program



EFP & OPERATION POLLINATOR UPDATE

Environmental Farm Plan

The Battle River Research Group's Environmental Coordinator Martina offers producers in the Paintearth County assistance with completing Environmental Farm Plans and assistance with government funding applications for programs such as Canadian Agriculture Partnership (CAP) and Farm Energy and Agri-Processing Program (FEAP). In 2018 Martina signed up 40 farmers and ranchers in the Paintearth County for EFP's, 21 of which were completed and submitted for approval. We saw a large increase in EFP's in 2018 due to the CAP program coming out in April 2018.

Operation Pollinator

Operation Pollinator was a new project we took on last year! Operation Pollinator is a program focused on research and partnerships to promote the health and well-being of bees and other pollinators given their essential role in agriculture and nature. The program's mandate is to support activities that enhance biodiversity, habitat and other practical initiatives that contribute to healthy pollinator populations. ARECA and its member associations have joined the Soil Conservation Council of Canada and Syngenta Canada to act as a provincial delivery agent for this initiative.

We set out to find producers in our area that would be interested in planting 2-4 acres of unusable crop land to a pollinator mix. The seeds in the pollinator seed mix are: Alsike clover, Birdsfoot trefoil, Phacelia, Red Clover, Timothy and Yellow & white sweet clover. This variety of seeds all are very attractive to bees and other beneficial pollinators because of their sweet pollen and nectar characteristics.

We now have 3 Operation Pollinator sites under the Battle River Research Group, all of which are doing very well. The sites are located at Daysland, Holden and Vegreville. Read below to learn about each individual site.

Site History: Holden Site

Planting Date: 1st Week of June (2017)

Acres Seeded: 3-4 acres

Seeding Method: Grass Seeder

Additional Site Info:

- Pre-seed burn off conducted prior to seeding
- Was pasture 4 years prior to planting pollinator mix
- Some winter kill of Phacelia, Timothy & Birds Foot trefoil
- Site located in a hard to get area for cropping practices near a riparian area

Site History: Daysland Site

Planting Date: May 29, 2018

Acres Seeded: 2 acres

Seeding Method: Brillion Seeder

OPERATION POLLINATOR UPDATE

Additional Site Info:

- Site was prepped prior to seeding
- Some volunteer canola present but should eventually get choked out by the pollinator mix
- Site located in a hard to get area for cropping practices near a riparian area

Site History: Vegreville

Planting Date: June 7, 2018

Acres Seeded: 4 acres

Seeding Method: Brillion Seeder

Additional Site Info:

- Site located on the edge of a shelterbelt
- Honey Bee boxes placed across the trees from the site

When I went to visit all our sites in fall 2018, I was humbled by the success the producers had in seeding and establishment of their sites. It was most wonderful to already see the impact these sites were having on the pollinators; the sites were buzzing with bumble bees and other beneficial insects. It was really a wonderful thing to see that these sites already have a healthy impact on the biosphere.



Eco Buffer Shelter Belt Demonstration

ECO BUFFER SHELTERBELT UPDATE

Another project that continues this year is the Eco Buffer Shelter Belt, this year was more focused on monitoring of the site and watching as it becomes established. The site is looking great this year, 80% of the native trees, shrubs, flowers and grasses did survive and continued to grow and flourish.

History of the Site

This year was the 3rd year of the development of the Eco Buffer Shelterbelt located behind the Flagstaff County building. Three years ago, the site was prepped, and 3 rows of trees and shrubs were planted. The distinct species included spruce, pine, poplar, and rose bushes. Due to the stress of the warm weather and sandy soil a few of the trees did not make it.

In June of 2016 we put in an order of some native flowers and shrubs, as these are an vital component to the Eco Buffer Shelterbelt because it is meant to draw in pollinators to the area to assist with the pollination of other plants and crops in the area. I selected the plants based on the region they were being planted and the soil conditions they would be in. With the significant help of our summer students Brianna and Montana and both Eric and Vicki we planted a variety of: Prairie Crocus, Honey Suckle, Saskatoon's, Milk Vetch, Shooting Star, Prairie Smoke, Golden Rod, Black Eyed Susan, Golden Bean, Prairie Goldenrod, Blue Eyed Grass and Sweet Grass. We also were humbled to have been given a variety of Jack Pine, Pine, Spruce, and Willow trees given to us from the Alberta Conservation Association.

All hands were on deck as we put down the plastic mulch in early July of 2016. We put the plastic mulch over top of the already existing trees from the year previous and pulled them through the plastic, so they would have less competition from weeds and a better chance at surviving. We then went around and made little holes in the plastic and randomly planted the flowers, shrubs and trees we got. When we put down the plastic mulch we added another 2 rows to our already existing 3, in total we now have 5 rows of the eco buffer shelter belt.

Throughout the summer of 2016, we continued to water and observe the site, and after a few weeks of planting went out to put stakes with the name of each plant next to it. In 2017 we continued to observe the site and did some weed picking. Over all the site looks good, and i cant wait to see how it will grow up and flourish in the comming years.



Field Trials & Demonstrations 2018



The terms below are used throughout our report. Statistics are needed to determine if the differences between treatments are likely due to the variable in question (variety, herbicide treatment etc.) or are due to other errors or factors.

Seed Status Abbreviations: S=Select; F=Foundation; R=Registered; C=Certified; BI=Breeding Institution; Dist=Canadian Distributor(s);



- Protected under plant breeder rights;



- Plant Breeder Rights Applied for.

AOV – Analysis of Variance: Why do we use analysis of variance when we are interested in the differences among means? It used to compare difference of means among more than two groups. It does this by looking at variation in data and where that variation is found. www.edanzediting.com. It's a statistical method for making simultaneous comparisons between two or more means.

OSL – Observed Significance Level

LSD - Least Significant Difference: The least significant difference indicates if the differences between different varieties or treatments are statistically significant or not. Generally, LSD is calculated at 5% level of probability for agricultural field experiments. It means that it is 95% certain that the differences are due to a treatment factor and not from any error. If treatments differ significantly at 10% LSD level it means that there are chances that you will get these results 9 out of 10 times under similar conditions.

Example - If Variety 'A' yielded 30 bushels per acre and Variety 'B' yielded 34 bushels per acre and the LSD (at 95%) is 2.5 bushels, then Variety B has significantly higher yield from variety A because $34-30=4$ which is greater than 2.5.

Some reports have letters (a, b, c, -...) behind results that have significant difference. Numbers followed by the same letter are not significantly different, and those followed by different letters differ significantly from each other.

Coefficient of Variation - The Coefficient of variation (CV) is a percentage value that is calculated by dividing the standard deviation by the treatment mean then multiplying by 100.

Treatment means with a lower standard deviation are more consistent across replicates.

In this report, only trials and individual treatments with $CV < 15\%$ are reported. To compare crop yield CV less than 15% is acceptable but CV less than 10% is more desirable to detect significant differences among treatments. Yield variation among different plots could be due to other factors such as: soil fertility variation, change in soil moisture, weeds and human error etc.

Measures of Dispersion - Basic measures of dispersion (standard deviation, standard error, coefficient of variation) can be calculated for each treatment mean.

Standard deviation and coefficient of variation are used to show how much variation is there among individual observations of a treatment mean, while standard error or confidence intervals show how good your estimate of the mean is. Standard deviation or coefficient of variation would be reported to see the amount of variation. For example, if you grew wheat plants with two different kinds of fertilizer, your main interest would be whether the yield of wheat plants was different, so report would be the mean yield \pm either standard error or confidence intervals. For artificial selection on the wheat plants to breed for better yield, you might be interested in which treatment had the higher variation (making it easier to pick the fastest-growing or higher yielding plants), so then standard deviation or coefficient of variation would be reported. Accessed - at <http://www.biostathandbook.com/standarderror.html>

RCBD - Randomized Complete Block Design: It is the most used experimental design for agronomic field experiments in which all experimental treatments grouped randomly into uniform blocks. Soil conditions within each block should be as uniform as possible so that observed differences among treatments is largely due to treatment effect and not due to soil fertility variation or difference in weed density. Blocks are replicated three or more times to separate treatment effect from the variation due to other factors at experimental site.

Split Plot Design – This design is mainly used to conduct interaction studies between two or more treatments. In a split plot design each main plot has sub plots. For example, main plots could be different seeding dates or rate of fertilizer application, while sub-plots could be different crop varieties. Different experimental designs such as RCBD or a Latin square design can be arranged as a split-plot design. Treatments in sub-plots are compared with more precision than main plots.

ARM Program - BRRG uses ARM software for data analysis to calculate different measures of variability in replicated field research trials. This program also helps with project design, plot plans, making seeding and harvesting labels, and statistical analysis.



2018 REGIONAL VARIETY TRIALS

Introduction

The Regional Variety Trials Testing Program is coordinated by the Alberta Regional Variety Advisory Committee (ARVAC) and Alberta Agriculture and Forestry (AAF). Variety performance data is collected throughout Alberta and Northern British Columbia and compiled by an RTV Coordinator for publication in the Alberta Seed Guide (www.seed.ab.ca). The RVT program is responsible for generating unbiased post-registration information for varieties.

Variety selection is important for production management and economical decisions. Every year RVT's provide regional performance information suitable for each environment on emerging crop varieties as compared to common and well-established varieties. All breeding lines can perform to their genetic potential. BRRG collects data on the yield, bushel weight, plant height, standability ratings 1=erect, 9=flat and tkw (thousand kernel weight). The data presented in the following tables is a useful tool in comparing the agronomic performance of different varieties in 2017.

The objectives of the trials were:

- To provide producers with agronomic data relevant to the local environment
- To familiarize local producers with newly registered varieties available to them, and
- To contribute local agronomic data to the provincial database

Table 1: List of regional variety trials seeded at BRRG in 2018

Crop	#of cultivars	# of replications
Durum	9	3
Canadian Western Red Spring (CWRS)& CWHWS	26	3
Canadian Western Special Purpose (CWSP)& CWSWS	10	3
Canadian Prairie Spring Red (CPSR)& CNHR	9	3
Triticale	2	3
Oats	11	3
Barley – 2 Row	17	3
Winter Wheat	9	3
Flax	7	4
Green Peas	5	4
Yellow Peas	11	4
Fababean	5	4
Total RVT plots: 391		

Materials and Methods:

Location: Castor RR 11-4 County of Paintearth, LSD: NE-06-38-11W4M, Cooperator: Kevin James

Experimental Design: Completely Randomized Block Design with 3 replications, Soil Zone: Moist Dark Brown East

Plot Management:

All cereal varieties at Castor were seeded on May 16, 2018 in canola stubble. Plots were direct seeded following a pre-seed burn-off with glyphosate. The plots were seeded with a Fabro small plot seeder using Technotill openers with 9-inch spacing, 6 rows wide. Seed depth placement was 1-1.5".

Sites were selected early spring and soil tested to determine soil fertility by the lab for the optimal yield goals for the region. All Nitrogen was side banded as urea at 110lb/ac and P_2O_5 placed with seed at 19lb/ac.

The amount of seed required was calculated using TKW, percent germination and estimated seed mortality.

Seed was treated at CDC North with Cruiser Maxx Vibrance Cereals Rate: 500mL/100 kg of seed; for tritcale – Dividend XL RTA Rate: 500mL/100kg seed.

Recommended herbicides were applied as per Alberta Crop Protection, Blue Book 2018. Plots were combined on Sep-28 with small plot combine. Final yield in plots were measured after drying harvest bags at 30°C to bring all grain to uniform moisture.

Table 2: Precipitation at BRRG site in 2018

Month	Rainfall in mm
May	28.7
June	50.9
July	52.9
August	14.4
Total	146.9

Source: Alliance ACIS Weather Station

Results:

The results from the 2018 RVT's are summarized in Tables 3 to 10. Please note that the actual yield levels indicated from small plot trials may be higher than yields expected under commercial production.

Data from regional varieties trial for all locations is available on Alberta Agriculture and Forestry website (www.agric.gov.ab.ca) as well as the Alberta Seed Guide publishes provincial averages and for comparison.

CEREAL VARIETY TRIAL - DURUM

Durum:

Yield of the durum varieties at Castor site were not significantly different with yields ranging from 4439 to 5278 kg/ha (Table 3).

Table 3: RVT Durum

Durum Varieties	Height cm	TKW gm	Yield bu/ac	Yield kg/ha	% of Check
STRONGFIELD*	80	47	96	5181	100
AAC STRONGHOLD	81	47	98	5278	102
AAC SUCCEED VB	81	48	83	4470	86
BRIGADE	87	49	93	5000	97
CDC ALLOY	77	48	88	4739	91
CDC CREDENCE	87	47	97	5206	100
CDC DYNAMIC	80	46	97	5239	101
DT878	80	45	88	4756	92
TRANSCEND	87	46	98	5250	101
CV %	5.50	3.94	11.83	11.83	0
*Check , No significant difference was observed in yield					



CEREAL VARIETY TRIAL - CWRS & CWHWS

Canadian Western Red & Canadian Western Hard White Spring Wheat Variety Trial: Twenty six cultivars were tested. There were no significant differences in yields between the different varieties (Table 4).

Table 4: RVT CWRS & CWHWS

CWRS & CWHWS	Height cm	TKW gm	Yield bu/ac	Yield kg/ha	% of Check	Protein %
CARBERRY*	75	35	63	4251	100	15.03
AAC ALIDA VB	85	39	69	4634	109	14.43
AAC BRANDON	78	40	60	4067	96	13.09
AAC CIRRUS	79	32	65	4353	102	14.48
AAC JATHARIA VB	92	38	64	4281	101	13.61
AAC TISDALE	81	40	61	4089	96	14.81
AAC VIEWFIELD	73	37	64	4286	101	13.82
AAC WARMAN VB	88	37	68	4569	107	14.47
BW1041	81	40	69	4645	109	14.44
BW1045	84	39	72	4865	114	14.26
BW1049	81	38	69	4676	110	14.2
BW5005	82	38	58	3895	92	14.82
BW5007	79	40	70	4706	111	13.27
BW5011	84	37	70	4705	111	15.52
BW5013	79	38	76	5129	121	15.19
CDC ADAMANT	80	36	70	4699	111	13.44
CDC GO	81	43	68	4545	107	14.52
CDC HUGHES	81	41	67	4512	106	16.14
CDC LANDMARK VB	83	41	70	4736	111	14.29
PARATA	84	37	67	4482	105	14.4
PARKLAND	76	35	67	4480	105	13.37
PT596	82	34	64	4311	101	13.49
PT782	83	36	70	4724	111	14.25
PT785	82	34	73	4904	115	15.63
STETTLER	86	40	63	4247	100	13.56
SY SOVITE	79	38	60	4051	95	14.08
CV%	3.15	3.49	9.46	9.46		
*Check, No significant difference was observed in yield						

CEREAL VARIETY TRIAL - CWSP & CWSWS

Canadian Western Special Purpose & Canadian Western Soft White Spring Wheat Variety Trial: Ten cultivars were tested. There were significant differences in yield between the varieties (Table 5). All varieties performed better than the check variety carberry.

Table 5: RVT CWSP & CWSWS

CWSP & CWSWS	Height cm	TKW gm	Yield bu/ac	Yield kg/ha	Significant difference	% of Check	Protein %
CARBERRY*	77	36	65	4394	d	100	9.13
AAC BRANDON	82	40	79	5309	c	121	8.91
AAC AWESOME	93	45	122	8180	ab	186	13.4
AAC PARAMOUNT	93	41	120	8100	ab	184	9.62
AC ANDREW	86	37	108	7269	ab	165	9.02
KWS ALDERON	75	33	103	6917	b	157	9.41
KWS CHARING	82	35	103	6911	b	157	8.6
KWS SPARROW	83	35	107	7201	ab	164	8.64
PASTEUR	83	38	105	7084	ab	161	10.28
AC SADASH	89	39	122	8244	a	188	12.65
CV%	3.23	5.47	6.77	6.77			
*Check							



CEREAL VARIETY TRIAL - CPSR & CNHR

Canadian Prairie Spring Red & Canadian Northern Hard Red Wheat Variety Trial: Nine cultivars were tested. There were significant differences in yield between the varieties (Table 6).

Table 6: RVT CPSR & CNHR

CPSR & CNHR	Height cm	TKW gm	Yield bu/ac	Yield kg/ha	Significant difference	% of Check	Protein %
CARBERRY*	76	33	64	4295	ab	100	12.36
AAC BRANDON	79	36	78	5231	ab	122	11.95
AAC ENTICE	80	35	63	4248	ab	99	12.71
AAC GOODWIN	80	36	82	5493	ab	128	13.28
AAC PENHOLD	67	39	68	4602	ab	107	13.3
AC FOREMOST	72	39	86	5803	a	135	13.93
CDC TERRAIN	85	37	82	5549	ab	129	13.57
HY2003 VB	79	39	81	5433	ab	127	12.35
SY ROWYN	76	29	59	3994	b	93	12.89
CV %	2.89	5.65	11.58	11.58			
*Check							

CEREAL VARIETY TRIAL - TRITICALE

Triticale: Two triticale varieties were seeded; there were significant differences observed in yield (Table 7).

Table 7: RVT Triticale

Triticale	Height	TKW	Yield	Yield
	cm	gm	bu/ac	kg/ha
Brevis	94	44.69	140	7544
AAC Delight	98	49.78	134	7267
CV %	1	5	3	3

CEREAL VARIETY TRIAL - OATS

Oats Variety Trial: Eleven oats varieties were seeded; there were significant differences observed in yield (Table 8).

Table 8: RVT Oats

Oat Varieties	Height cm	TKW gm	Yield bu/ac	Yield kg/ha	% of Check
CDC DANCER*	88	37	107	5781	142
AC MORGAN	90	41	122	6562	161
AC MUSTANG	93	38	123	6620	163
CDC ARBORG	87	40	125	6705	165
CDC RUFFIAN	76	40	110	5947	146
CFA1502	91	37	123	6633	163
CS CAMDEN	85	38	123	6628	163
KARA	79	38	117	6286	155
ORE 3541 M	87	38	100	5397	133
ORE 3542 M	82	39	108	5808	143
OT3087	90	38	116	6244	154
CV %	9.20	4.40	7.77	7.77	
*Check , No significant difference was observed in yield					



CEREAL VARIETY TRIAL - BARLEY

RVT-Barley: The RVT Barley trail had 17 cultivars tested (Table 9) there were significant differences observed in yield.

Table 9: RVT- Barely

Barley Varieties	Height cm	TKW gm	Yield <u>bu/ac</u>	Yield kg/ha	Significant difference	% of Check
AC METCALFE*	78.74	45	76	4067	cd	100
AAC CONNECT	75.36	51	107	5782	ab	142
AAC SYNERGY	81.92	49	118	6346	ab	156
ALTORADO	70.49	48	115	6212	ab	153
CDC ASCENT	84.46	42	104	5608	ab	138
CDC AUSTENSON	79.17	52	127	6838	a	168
CDC COPELAND	89.11	50	100	5367	ab	132
CDC COPPER	73.03	49	120	6450	ab	159
CDC GOLDSTAR	81.07	47	106	5722	ab	141
CLAYMORE	78.11	47	102	5470	ab	134
LOWE	86.36	52	114	6122	ab	151
OREANA	64.14	53	101	5429	ab	133
SIRISH	68.37	47	91	4881	<u>bc</u>	120
SR14501	89.32	45	72	3898	cd	96
SR16511	95.47	50	63	3392	d	83
TR15155	70.91	47	103	5544	ab	136
TR16629	88.90	48	100	5382	ab	132
CV %	3.37	3.15	10.37	10.37		
*Check						



Introduction

Regional Flax trials have been conducted by the BRRG since 2006. Flax is late maturing and needs adequate heat units late in the year to hasten ripening. For these reasons Flax is considered a high-risk crop for East Central Alberta. There are two main reasons why Canadian farmers choose to include flax in their crop choices (<https://flaxcouncil.ca/growing-flax/introduction/>):

- Its value in rotations; and
- A crop providing good returns on investments (low input crop).

Flax is grown either for oil or fibre; oilseed flax is the type grown in Alberta. Linseed oil extracted from the flax is used as an excellent preservative for wood and concrete surfaces. The flax grown in Alberta has a reputation for yielding very high-quality linseed oil that dries quickly, a trait of flax grown in a cool climate.

Canada flax is sought-after in world markets for its high seed quality as it increases the alpha linolenic fatty acid (ALA) content and iodine value of the seed. Flaxseed also has Omega-3 fatty acid shown to be beneficial to health.

Flax does well in areas suitable for wheat as it requires a similar frost-free season. Flax can also be grown in the Peace River region because the long days hasten maturity. Flax grows best on heavy loam soils that retain moisture well for the plant's limited root system.

The handling of flax straw is one of the greatest challenges in growing the crop. Flax can be chemically desiccated to make the straw more brittle and hence easier to chop and spread. There are several methods for handling the straw. It can be dropped into windrows for baling for flax fibre production where there is a market, or used for livestock. In some regions, flax straw is burned, however this has many environmental consequences. Recent combine improvements and desiccation may reduce or eliminate the need for other residue management operations.



FLAX VARIETY TRIALS

Location: Castor RR 11-4 County of Paintearth, LSD: NE-09-38-11W4M, Cooperator: Kevin James

Experimental Design: Completely Randomized Block Design with 3 replications, Soil Zone: Moist Dark Brown East

Flax RVT Trial: Seven flax varieties were seeded; there were significant differences observed in yield (Table 10).

Table 10: Flax RVT

Flax Varieties	Height cm	Yield bu/ac	Yield kg/ha	Significant difference	% of Check
CDC BETHUNE*	72	22	1394	b	100
AAC BRIGHT	73	23	1422	b	102
AAC MARVELOUS	68	20	1285	b	92
AAC PRAIRIE SUNSHINE	73	31	1960	a	141
CDC DORADO	64	23	1434	b	103
CDC GLAS	73	30	1909	a	137
FP2513	70	32	2021	a	145
CV %	3.81	7.46	7.46		
*Check					



Introduction

Field peas vary considerably in growth type, days to maturity, seed type and yield potential. The Field Pea Regional Variety Trial is a valuable tool in comparing variety characteristics in different locations across Alberta. The choice should never be based solely on genetic yield potential of the variety. Research initiatives are aimed at growing genetics, yield and sustainability in pulse production, and crop utilization and health benefits are also focus areas.

Table 11: Yellow Pea

FIELD PEA – YELLOW

Variety	Overall Yield	Overall Station of Testing Years	Area:										Agronomic Characteristics:			
			1		2		3		4		5		Mat. Rating ¹	Vine Length (cm)	TSW ² (g)	Stand-ability ³ (1 - 9)
			Yield (%)	Site Years	Yield (%)	Site Years	Yield (%)	Site Years	Yield (%)	Site Years	Yield (%)	Site Years				
Varieties tested in the 2018 trials (Yield and agronomic data only directly comparable to CDC Amarillo)																
CDC Amarillo (kg/ha)	5277		3842		4674		6866		5394		6471					
CDC Amarillo	100	106	100	18	100	30	100	17	100	25	100	16	M	81	227	2.4
AAC Barhead 🍷	99	43	96	7	96	10	98	8	103	11	98	7	E	82	233	2.5
AAC Carver 🍷	105+	43	105	7	103	10	104	8	108+	11	103	7	E	84	243	2.9
AAC Chrome 📈	110+	29	116+	5	110+	8	108	5	108	6	105	5	M - L	72	240	2.9
AAC Lacombe 🍷	104+	76	106+	13	101	23	106+	10	105+	20	102	10	M	76	258	2.2
CDC Athabasca 🍷	95-	29	92	5	94	8	99	5	95	6	91-	5	M	80	284	2
CDC Canary 🍷	104	29	106	5	104	8	98	5	101	6	101	5	E	80	241	2.6
CDC Inca 🍷	104	43	101	7	97	10	110+	8	103	12	101	6	M	79	231	2.1
CDC Lewochko (A) 📈	106	15	102	2	98	4	104	3	100	3	105	3	M	89	233	1.6
CDC Meadow	97-	92	98	15	100	26	90-	13	96-	25	94-	13	M	81	205	3.6
CDC Spectrum 🍷	106+	29	103	5	99	8	106+	5	100	6	109+	5	M	78	242	2.1
Previously tested varieties																
AAC Peace River	92-	49	89-	8	94	15	90	5	97	16	82	5	VE	68	217	3.8
Abarth 🍷	98-	49	101	8	104	16	83-	5	94	14	102	6	M	77	249	3.6
LN4228 🍷	93-	45	90-	8	94	11	89	7	95	14	97	5	M	69	254	2.1
Varieties tested in 2012 - 2014 (Yield and agronomic data only directly compared to CDC Meadow)																
CDC Meadow (kg/ha)	4982		3793		4567		6266		5189		5175					
CDC Meadow	100		100		100		100		100		100		M	81	207	3.6
CDC Saffron	103	47	110	8	104	15	99	5	101	13	99	6	M	84	236	4.3
Hugo 🍷	93-	47	104	7	92	13	92	6	96	14	75-	7	M	73	210	5.2
Stella 🍷 NR F	80-	45	75-	7	81-	13	83-	6	80-	12	80-	7	M	95	213	3.9
Varieties tested in 2003 - 2011 (Yield and agronomic data only directly comparable to Cutlass)																
Cutlass (kg/ha)	4485		3388		4267		5111		4816		3718					
Cutlass †	100		100		100		100		100		100		M	71	228	4.1
Agassiz 🍷	103	43	99	5	102	8	100	6	104	19	106	5	M	77	237	2.9
CDC Homet	107+	43	99	6	111+	11	106+	6	102	13	119	7	M	89	215	3.7
CDC Prosper	97-	44	90	4	98	9	93-	6	99	18	97	7	E	73	150	3.9
CDC Treasure	100	44	96	4	104	9	96	6	100	18	105	7	E	80	217	3.4
Thunderbird	97	37	88	5	99	8	98	6	98	13	102	5	M	76	229	2.1
Varieties tested in 2000 - 2005 (Yield and agronomic data only directly comparable to Carrera)																
Carrera (kg/ha)	4126		2913		2779		5248		4681		4016					
Carrera	100		100		100		100		100		100		E	54	257	4.7
CDC Golden	105	36	99	5	109	12	99	7	105	11	XX	XX	M	70	223	3.5

Remarks: Stella is a silage type pea. All the yellow pea varieties listed in the table are Powdery Mildew resistant except Carrera that is susceptible. ▲ = Applied for Plant Breeder's Rights protection (PBR). ☼ = Protected by PBR (UPOV 78). ☺ = Protected by PBR (UPOV 91). A = First year entries (2018). NR = Variety not registered with CFIA. F = Forage type. XX = Insufficient data to describe. LGPN 4903 removed from the table. ¹Maturity: E = early, M = medium, L = Late; ²Thousand Seed Weight: g; ³Standability: 1 = erect, 9 = flat; ⁴Tolerance to: P = poor, F = fair, G = good, VG = very good; ⁵Seed Coat Dimpling: VG = very good (0 - 5%), G = good (6 - 20%), F = fair (21 - 50%); ⁶Green Seed Coat: G = good (0 - 10%), F = fair (11 - 25%).

Table 12: Green Pea

FIELD PEA – GREEN

Variety	Overall Yield	Overall Station Years of Testing	Area:										Agronomic Characteristics:			
			1		2		3		4		5		Vine			
			Yield (%)	Site Years	Yield (%)	Site Years	Yield (%)	Site Years	Yield (%)	Site Years	Yield (%)	Site Years	Maturity Rating ¹	Length (cm)	TSW ² (g)	Standability ³ (1 - 9)
			Varieties tested in the 2018 trials (Yield and agronomic data only directly comparable to CDC Limerick)													
CDC Limerick (kg/ha)	4852		3571		4567		6160		4807		6061					
CDC Limerick	100	106	100	18	100	33	100	17	100	30	100	8	M	78	211	3
AAC Comfort ☺	100	30	104	6	98	9	104	5	98	7	98	3	M - L	78	253	3.3
CDC Forest ☺	109+	30	121+	6	109+	9	108	5	102	7	108+	3	M	81	236	2.2
CDC Spruce ☺	105+	30	104	6	107+	9	108+	5	99	7	108	3	M	81	254	2.3
LRP1424 NR	103	30	112	6	103	9	102	5	99	7	101	3	M	81	214	2.6
Previously tested varieties																
AAC Radius	92-	44	94	8	90-	10	88-	6	94-	16	88	4	M	76	217	3.6
AAC Royce	96-	40	106	8	92	8	92	6	98	14	87	4	M	67	247	4.1
CDC Greenwater	106+	42	106	8	109	10	105	6	106+	14	97	4	L	74	230	2.8
Varieties tested in 2013 - 2014 (Yield and agronomic data only directly comparable to CDC Patrick)																
CDC Patrick (kg/ha)	4732		5083		4543		5591		4305		5060					
CDC Patrick	100	109	100	16	100	34	100	12	100	32	100	14	M	79	186	4.4
CDC Pluto	96-	52	101	8	98	17	81-	5	100	16	87-	6	M	82	170	6
CDC Raezer	105	52	91	8	107	17	94	5	107	16	118	6	M	89	227	4.2
CDC Tetris	106	52	102	8	105	17	93	5	110+	16	116+	6	L	91	215	4.4
Varieties tested in 2004 - 2012 (Yield and agronomic data only directly comparable to Cooper)																
Cooper (kg/ha)	4724		4947		4316		5435		4835		4244					
Cooper ☹	100	121	100	18	100	34	100	14	100	36	100	19	L	76	270	3.6
CDC Sage	82-	31	79	3	80-	6	84-	6	84-	13	78	3	M	75	197	3.3
CDC Striker	96-	39	92	3	115	7	107	4	89-	21	92	4	M	72	255	3
Mendel	91-	38	75-	3	97	11	87-	4	91-	15	89	5	M	78	205	3.9

Remarks: CDC Tetris is an Espace type with blocky seed shape. All the green pea varieties listed in the table are Powdery Mildew resistant except CDC Striker that is susceptible. ▲ = Applied for Plant Breeder's Rights protection (PBR).
 ☉ = Protected by PBR (UPOV 78), ☉ = Protected by PBR (UPOV 91). NR = Variety not registered with CFIA. XX = Insufficient data to describe. ¹Maturity: E = Early, M = Medium, L = Late; ²Thousand Seed Weight: g; ³Standability: 1 = Erect, 9 = Flat; ⁴Tolerance to: P = Poor, F = Fair, G = Good, VG = Very Good; ⁵Seed Coat Dimpling: VG = Very Good (0 - 5%), G = Good (6 - 20%), F = Fair (21 - 50%).

Source: Alberta Seed Guide - 2018



Table 13: Faba Bean

FABA BEAN

Variety	Type	Overall Yield	Overall Station Years of Testing	Relative Maturity ¹	Plant Height (cm)	Thousand Seed Weight (g)	Flower Colour ²
Varieties tested in the 2018 trials (Yield and agronomic data only directly comparable to Snowbird)							
CDC Snowbird (kg/ha)		5722					
CDC Snowbird ☼	Zero Tannin	100	54	E	89	478	W
CDC 219-16 NR	Zero Tannin	101	10	E	83	358	W
DL Tesoro NR	Zero Tannin	107	10	M	89	571	W
Fabelle ▲	Tannin	115+	20	M	94	534	C
Malik NR * NR	Tannin	96-	42	M	83	632	C
Previously tested varieties: 2013 - 2015 (Yield and agronomic data only directly comparable to Snowbird)							
Snowdrop	Zero Tannin	88-	23	E	87	351	W
Tabasco ☼	Zero Tannin	85-	15	M	86	374	W

Remarks: All coloured flower types have seed coats that contain tannins and may be suitable for export food markets if seed size and quality match customer demand. Varieties tested for a minimum three years are considered fully tested. ▲ = Applied for Plant Breeder's Rights protection (PBR). ☼ = Protected by PBR (UPOV 78). ☺ = Protected by PBR (UPOV 91). NR = Variety not registered with CFIA. * Contract Varieties. Varieties removed from the table: Athena, Rodeo and Vertigo.

¹Maturity: E = early, M = medium, ML = medium late, L = late; ²Flower Colour: W = white flower, zero tannin; C = colored flower, tannin.

Source: Alberta Seed Guide - 2018



Regional Silage Variety Trials 2018



SILAGE VARIETY TRIAL

Regional Silage Variety Trials

Participating Organizations (2018)

- Battle River Research Group, Forestburg, AB, (780) 582-7308
- Chinook Applied Research Association, Oyen, AB, (403) 664-3777
- Gateway Research Organization, Westlock, AB, (780) 349-4546
- Lakeland Agricultural Research Association, Bonnyville, AB, (780) 826-7260
- Mackenzie Applied Research Association, Fort Vermilion, AB (780) 927-3776
- Peace Country Beef and Forage, Fairview, AB, (780) 836-3354
- Smoky Applied Research and Demonstration Association, Falher, AB, (780) 837-2900

Major Sponsors

- Alberta Agriculture and Forestry
- A& L Canada Laboratories Inc.
- Davidson Seeds, Degenhardt Farms, Dyck Seed Farm, Kevin Elmy, Fabian Seeds, Lindholm Seed Farm, Mastin Seeds, Solick Seeds, H. Warkentin,

Trial Information

Silage yield and nutritional information was collected by seven applied research associations in 2018 at sites from Oyen in the south to Fort Vermilion in the north. Varieties of barley, oats, triticale and peas commonly used for silage, green feed and swath grazing were included in the trial. The cereal trials, (barley, oats & triticale), were seeded at recommended seeding density rates with recommended fertility. The pulse mixture trial looked at increasing the nutritional value of silage, with a potential side benefit of decreasing future nitrogen costs.

Nutritional Analysis

Nutrition was assessed using NIRS for macro-nutrient assessments and wet chemistry for the micro-nutrients. Full nutritional analysis was done on each sample, however; only six nutritional categories are reported: crude protein (CP), total digestible nutrients (TDN) which is an estimation of energy, calcium (Ca), phosphorus (P), potassium (K) and magnesium (Mg).

SILAGE VARIETY TRIAL

Table 14: Silage Variety Trials 2018

Crop	# of cultivars	# of replications
Oats	9	4
Triticale	15	4
Barley	13	4
Pulse Mixture	9	4
Winter Spring Cereals	12	4
Total: 232		

Silage Variety Trials 2018

Objectives:

- Provide livestock producers with agronomic data to determine forage production in east-central Alberta
- To familiarize local producers with newly registered varieties available to them while comparing nutritional values.

Varieties of barely, oats and triticale are commonly used for silage, green feed and swath grazing were included in the trial as well as new varieties showing good potential for these uses. Tables 14 to 23 below show a summary of data as compared to the check variety. The findings from our trials, the summaries from the RSVT's across different trial sites in the province are also reported in the Alberta Seed Guide (www.seed.ab.ca).

Materials and Methods:

Silage variety trials were seeded at the same location with regional variety trials. Plots were maintained with the same managed practices as regional variety trials.



OAT SILAGE VARIETY TRIAL

Results:

Table 15: Silage oats

Variety	Height cm	DM Yield ton/ac
CDC BALER	90	2.59
AC JUNIPER	95	2.82
AC MORGAN	89	2.56
CDC HAYMAKER	88	2.20
CDC SEABISCUIT	87	2.56
CDC SO-I	82	2.45
MURPHY	96	2.50
ORE 3542 M	85	2.52
WALDERN	100	2.77
CV %	3.22	13.13
NS: No significant difference was found among varieties		

Table 16: Nutrients analysis for silage oats

Variety	CP	TDN	Ca	P	K	Mg
	%					
CDC BALER	11.58	62.72	0.28	0.22	4.23	0.18
AC JUNIPER	11.56	60.27	0.24	0.21	3.68	0.15
AC MORGAN	11.73	61.32	0.27	0.25	4.00	0.17
CDC HAYMAKER	12.53	62.67	0.29	0.26	4.35	0.19
CDC SEABISCUIT	12.25	61.12	0.25	0.22	3.89	0.16
CDC SO-I	11.85	60.99	0.27	0.23	4.23	0.18
MURPHY	11.02	61.14	0.27	0.23	3.90	0.17
ORE 3542 M	11.45	61.12	0.23	0.24	4.07	0.16
WALDERN	11.43	61.57	0.28	0.20	3.89	0.17
CP: Crude Protein, TDN: Total Digestible Nutrients, Ca: Calcium, P: Phosphorus, K: Potassium, Mg: Magnesium						

TRITICALE SILAGE VARIETY TRIAL

Triticale Silage: Five triticale cultivars were tested for yield. The triticale trial was harvested at the late milk stage. More details are in Table 17 and Table 18.

Table 17: Triticale silage

Variety	Height cm	DM Yield ton/ac
TAZA	114	2.82
BUNKER	121	2.55
SUNRAY	108	2.61
T256	99	2.77
TYNDAL	112	2.71

Table 18: Nutrients analysis for silage triticale

Variety	CP	TDN	Ca	P	K	Mg
			%			
TAZA	9.55	61.90	0.21	0.20	2.14	0.13
BUNKER	10.01	60.25	0.23	0.20	2.12	0.15
SUNRAY	9.94	61.80	0.20	0.22	2.10	0.16
T256	8.81	63.59	0.18	0.20	1.74	0.16
TYNDAL	9.38	60.46	0.22	0.21	2.07	0.14

CP: Crude Protein, TDN: Total Digestible Nutrients, Ca: Calcium, P: Phosphorus, K: Potassium, Mg: Magnesium



BARLEY SILAGE VARIETY TRIAL

Barley Silage: Thirteen barley silage cultivars was tested for yield; detailed results are in Table 19.

Table 19: Barley silage

Variety	Height cm	DM Yield ton/ac	Significant difference
CDC AUSTENSON	100	2.42	ab
ALTORADO	92	2.55	a
AMISK	96	1.72	c
CANMORE	95	2.55	a
CDC COALITION	90	2.80	a
CHAMPION	95	2.74	a
CHIGWELL	99	1.91	c
CLAYMORE	96	2.36	ab
CONLON	87	2.55	a
RANGER	97	2.01	c
SR14501	111	1.68	c
SUNDRE	100	2.06	bc
CDC AUSTENSON	100	2.42	ab
CV %	2.67	9.28	



CEREAL & PULSE MIX SILAGE

Cereal and Pulse Mix silage: Detailed results are in Table 20 & 21.

Table 20: Cereal and Pulse Mix silage

Variety	DM Yield ton/ac	Significant difference
CDC AUSTENSON	2.50	a
CDC BALER	1.89	ab
TAZA	2.44	a
CDC AUSTENSON/CDC MEADOW	1.64	b
CDC BALER/CDC MEADOW	1.55	b
TAZA/CDC MEADOW	2.08	ab
CDC AUSTENSON/CDC LEROY	1.96	ab
CDC BALER/CDC LEROY	1.47	b
TAZA/CDC LEROY	2.10	ab

Table 21: Nutrients analysis for Cereal and Pulse Mix silage

Variety	CP	TDN	Ca	P	K	Mg
	%					
CDC AUSTENSON	8.09	61.40	0.27	0.15	1.85	0.14
CDC BALER	9.79	58.34	0.31	0.14	3.04	0.17
TAZA	8.77	60.15	0.21	0.17	1.67	0.12
CDC AUSTENSON/CDC MEADOW	9.59	58.21	0.60	0.19	2.01	0.20
CDC BALER/CDC MEADOW	9.94	55.32	0.52	0.17	2.83	0.20
TAZA/CDC MEADOW	9.61	55.80	0.38	0.17	1.94	0.14
CDC AUSTENSON/CDC LEROY	9.86	59.32	0.51	0.18	2.07	0.20
CDC BALER/CDC LEROY	10.63	57.44	0.51	0.20	2.90	0.20
TAZA/CDC LEROY	9.56	57.55	0.34	0.18	1.76	0.16

CP: Crude Protein, TDN: Total Digestible Nutrients, Ca: Calcium, P: Phosphorus, K: Potassium, Mg: Magnesium

CEREAL & PULSE MIX SILAGE

Table 22: Winter Spring Cereals silages

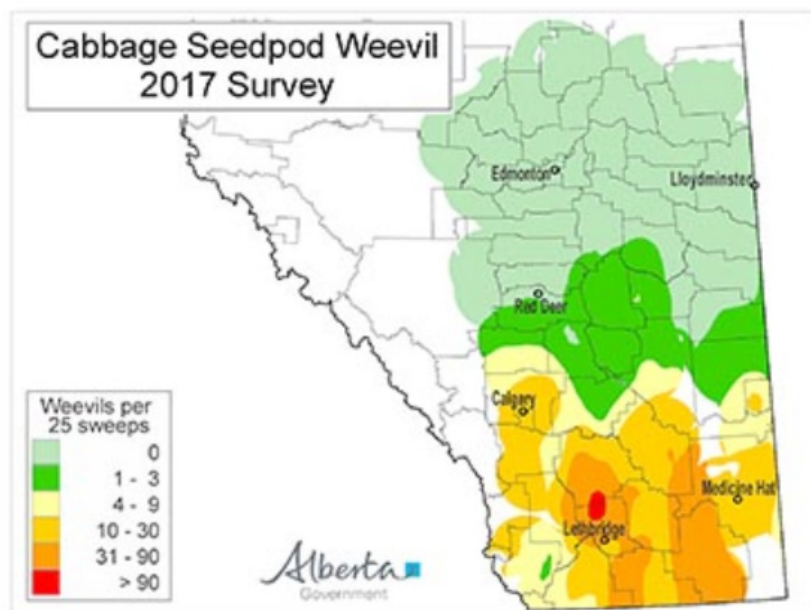
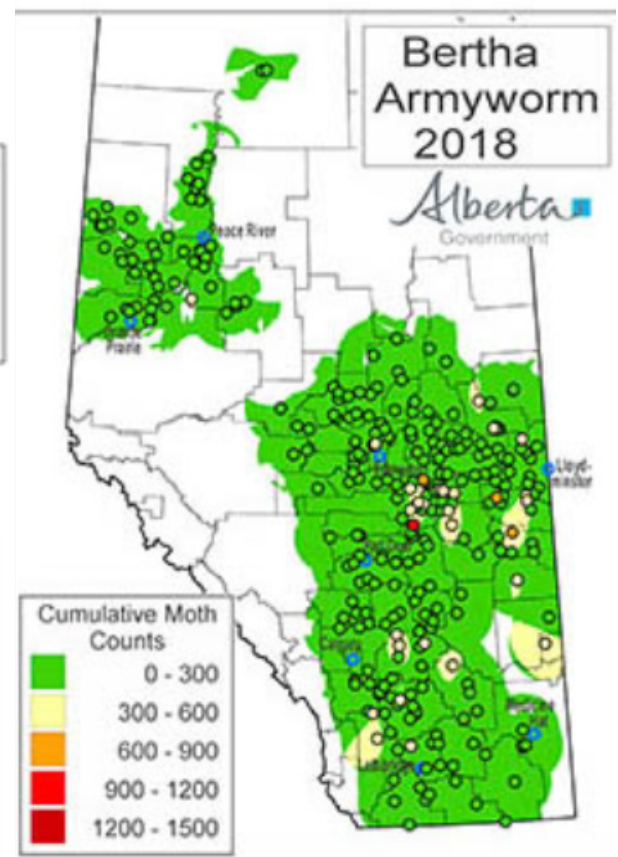
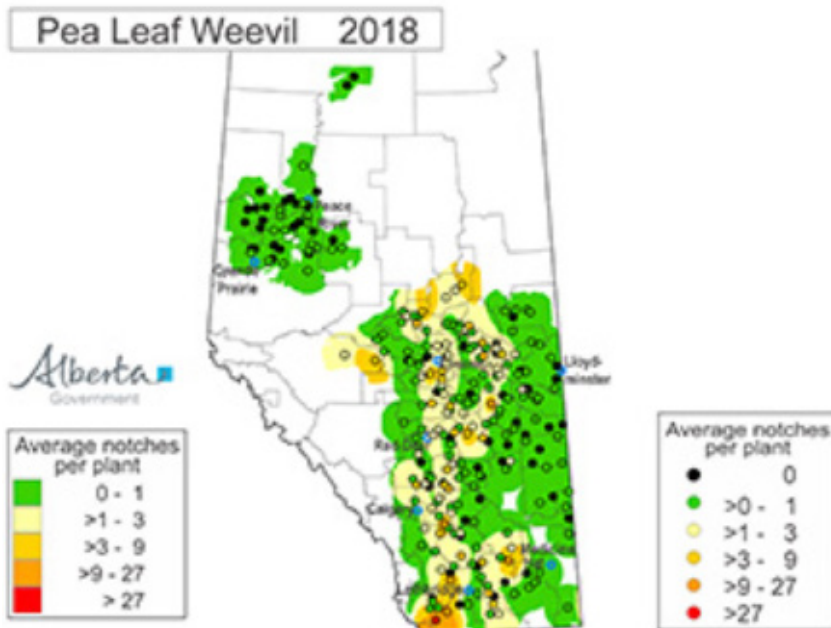
Variety	Height cm	DM Yield ton/ac
CDC AUSTENSON	96	3.36
CDC BALER	114	3.19
TAZA	55	1.43
AC RADIANT/CDC AUSTENSON	96	3.85
AC RADIANT/CDC BALER	118	2.75
AC RADIANT/TAZA	111	3.21
METZGER/CDC AUSTENSON	96	3.56
METZGER/CDC BALER	114	2.49
METZGER/TAZA	104	3.13
PRIMA/CDC AUSTENSON	88	2.76
PRIMA/CDC BALER	110	2.15
PRIMA/TAZA	107	3.77

Table 23: Nutrients analysis for Winter Spring Cereals

Variety	CP	TDN	Ca	P	K	Mg
	%					
CDC AUSTENSON	8.79	60.63	0.30	0.15	2.62	0.13
CDC BALER	10.98	59.42	0.32	0.17	3.34	0.17
TAZA	15.75	66.50	0.51	0.36	5.80	0.21
AC RADIANT/CDC AUSTENSON	9.76	60.92	0.32	0.17	2.72	0.14
AC RADIANT/CDC BALER	11.80	61.56	0.33	0.19	3.73	0.16
AC RADIANT/TAZA	9.14	58.10	0.26	0.18	2.67	0.13
METZGER/CDC AUSTENSON	9.42	60.98	0.33	0.16	2.66	0.13
METZGER/CDC BALER	10.05	59.65	0.31	0.18	3.12	0.15
METZGER/TAZA	11.32	61.93	0.31	0.20	3.07	0.15
PRIMA/CDC AUSTENSON	9.51	59.34	0.39	0.17	3.14	0.16
PRIMA/CDC BALER	11.36	60.60	0.34	0.20	3.67	0.17
PRIMA/TAZA	10.20	58.83	0.29	0.17	2.89	0.16

CP: Crude Protein, TDN: Total Digestible Nutrients, Ca: Calcium, P: Phosphorus, K: Potassium, Mg: Magnesium

2018 INSECT MONITORING MAPS



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