Battle River Research Group

Annual Report


JOHN DEERE
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Battle River Research Group

Mission Statement

"Improving agriculture with independent producer driven research."

Vision Statement

"The Battle River Research Group is a grass roots organization whose focus is agricultural sustainability. We provide credible, unbiased extension information while promoting an integrated approach to research through partnerships with producers, industry and government."

Sponsoring Counties

FLAGSTAFF COUNTY

COUNTY OF STETTLER NO.6

COUNTY OF PAINTEARTH Nº 18

CAMROSE COUNTY
YOUR PLACE TO LIVE - WORK - PLAY

BEAVER COUNTY

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Battle River Research Group

2016 Executive

2016 Executive

President	Vice President	Treasure
Blair Kuefler Forestburg (780) 915-7632	Doreen Blumhagen Halkirk County of Paintearth ARECA Rep. (403) 583-3775	Steven Vincett Galahad (780) 583-2140

Directors

Elgar Grinde Holden (780) 688-2123	Dale Collision Holden (780) 668-2471	Gary Matthiessen Heisler Flagstaff County (780) 889-2204
Colin Wager Coronation (403) 575-4124	Greggory Jackson Gadsby Stettler County (403) 574-2359	

2016 Staff

2016 Full-Time Staff

Vicki Heidt Manager/Forage and Livestock Program Coordinator cell: (780) 878-4101	Eric Nielson Environmental Program & Extension Coordinator cell: (587) 876-3121	Martina Alder Asst. Extension & Environmental Program Coordinator cell: (587) 983-4028

2016 Seasonal Staff

Brianna Madge	Montana Magneson

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 Commsission
- Alberta Barley Commission
- Alberta Pulse Growers
- Canada Humalite
- CPS, Forestburg
- Agrium

Agricultural Research and Extension Council of Alberta (ARECA) and Partner Associations

Project Sponsors and Support

Agriculture Opportunity Fund (AOF)
AB Agriculture & Forestry (AF)
Agricultural Research and Extension Council of Alberta (ARECA)
Agriculture and Agri-Food Canada (AAFC)
Agrium
Alberta Barley Comsission
Alberta Beef Producers
Alberta Canola Producers Commission
Alberta Wheat Commission
Alberta Pulse Growers
Canola Council of Canada
Canadian Humalite International
Alberta Pulse Growers
Mosaic Canada
Alberta Conservation Association
Sponsoring seed companies of variety testing program

Thanks to our many other Sponsors and Advisors who helped in 2016
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Dupont Canada
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Harry Brook
Mark Cutts
Neil Whatley
Barry Yaremcio
Karin Lindquist
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Dr. Surya Acharya

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Pickseeds
Central Testing Labs
Forestburg Seed Cleaning Plant
Solick Seeds, Len Solick
SeCan, Trent Whiting
CARA (Chinook Applied Research Association)
GRO (Gateway Research Organization)
Bayer Crop Science
CPS
AWES - Jeff Renton & Luke Wonneck

Co-Operators
Gerald/Blair Kuefler- Galahad Forestburg
Kevin James-Castor
Elgar Grinde-Holden
Flagstaff County

Tour and Workshop Support
Alberta Pulse Growers
Flagstaff County-Kelsey Fenton
Paintearth County - Trevor Kerr
Camrose County-Mark Millang
Counties of Minburn and Vermillion River
Alberta Canola Producer Association
Cows & Fish
Grazing School for Women Committee
Battle River Watershed Alliance

We apologize to anyone we unintentionally omitted

President's Report

2016 will certainly be remembered for the challenges it posed for the agricultural community. Farmers got off to an early start with the warm and open spring. Optimism was high as the crop developed through the summer, but the fall was as challenging as they come. Despite an extended combining period and numerous rain delays, crop quality was generally a pleasant surprise, although many producers will be tasked with finishing harvest in the spring

Farmers are a resilient breed, and we now look forward to the 2017 growing season with hope.

BRRG saw many changes over the year as well. We welcomed new employee Martina Alder, who has proven herself invaluable in event planning and connecting with producers. Some of our most popular events were our Farmers appreciation Octoberfest supper and our beef and forage extension meetings. On behalf of the board I would like to thank Vicki and Eric for their work throughout the year to put these together.

Going forward, we are looking to engage a greater number of producers in our area and bring the next generation into the research group community. We look forward to suggestions and participation from our membership to ensure BRRGs continued relevancy to local operations.

Blair Kuefler

Environmental Report

Alberta Agriculture and Forestry has recently indicated that they would like us to put more emphasis on environmental extension and I think that certainly was the case for 2016. This emphasis also included some extra short term funding from which we were able to access to hire Martina Alder as our assistant Extension and Environmental program coordinator.

2016 included organizing several environmentally related extension events throughout the year. We worked with Rob Harlan of the Solar Energy Society of Alberta to put on three different Solar Grid Tie In workshops in Ferintosh on February 25, in Castor on April 6 and in Killam on December 13. With the Growing Forward 2 PV program in place, there was good interest at these events with an average of about 50 at each event. We had one summer event that was focused exclusively on soil health, Jay Fuhrer's In the Field Soil Health School at Red Tail Farms in Castor. We also had Dr. Yamily Zavala from Chinook Applied Research Association (CARA) speak about soil health at Castor during our Castor/Killam Field Day on July 20. In the fall, on November 22-23 in Vegreville, we held a Nicole Masters Advanced Soils School in Vermilion in conjunction with Lakeland Agricultural Research Association (LARA). This also included a presentation by Nicole the day before to students at Lakeland College in their big lecture theatre.

Once again, we were able to help several producers out with starting and completing their Environmental Farm Plans. This was the first year that all EFP's that were started or completed were the EFP WebBook rather than the binder. We also assisted producers in completing and answering questions related to Growing Forward 2 programs. 2017 will be a quieter year on this front as Growing Forward 2 is winding down and Growing Forward 3 will be kicked off in 2018.

Part of the environmental program is also having demonstrations where we can showcase new environmentally related ideas. We continued working at establishing the Eco-Buffer Shelterbelt project in Sedgewick, planting more native trees, shrubs, and flowers at the site. If you have any ideas for more projects, please let us know, and we can discuss them.

2016 was a year in which we endeavored to increase our environmental footprint as an organization and I am quite satisfied with how things went and excited about what we will be able to do in the future.

Eric Neilson

Welcome New Staff

For those of you who don't know me, I am Martina Alder, the Assistant Extension and Environmental Program Coordinator! I grew up on a mixed farm north of Stettler, and now reside east of Castor where my boyfriend and I grain farm.

2016 has been nothing short of exciting for me. I graduated from my final year at Olds College where I studied Agriculture Management, major in Crop Production. A few short days after my last exam I began work at the Battle River Research Group as a summer student. Being a summer student with BRRG was a good way to begin my career here. I learned the ins and outs of the plots and learned what it took to do small plot research. Two girls who made it even more fun were my fellow summer students Brianna Madge and Montana Magneson! These two girls were hard working and are the main reason for the beautiful clean plots this year! My days as a summer student were cut short when a position opened up to be Eric's assistant. I was more than excited to apply for the position, and to my luck they chose me for the position!

Working at BRRG has combined my passion for agriculture with my bubbly personality. I have enjoyed getting to know so many of our Members, Board Members and industry people! Organizing and attending our extension events has really been an enjoyable task for me as I enjoy interacting with people and seeing positive outcome after putting them together! Taking on the Eco Buffer Shelterbelt project was another highlight of the summer. I enjoy gardening so getting to pick out native plants and shrubs was right up my ally! I cant wait for the shelterbelt to grow and flourish in the coming years! I have really enjoyed working alongside Eric and Vicki and learning what all the Battle River Research Group is about. In our work place everyone wears multiple hats, its wonderful to have all hands-on deck when we do projects. I am excited to see what 2017 brings!

Martina Alder

Manager's Report

2016 was another year for the books here at your local Applied Research Association (ARA). For the most part seeding went well, though we did run into an issue near the end with the electric motor on the one cone on our seeder. We did luck out and managed to get all of the harvesting done before the rain and snow came, although that last day we were out there, it was cold and blustery, and a few drops threating to shut us down...it was memorable, as we have no cab on the combine and you need a couple of others on the ground handling bags and tags.

In early December we parted ways with Manjit Deol, who had been working as the Crop Agronomist, so as I write this we are looking for a new person to file the role. On a positive note earlier this year we were able to hire a second staff member, Martina Alder, to help with the event planning, newsletter and other Extension activities. Along with Extension she's also been helping with the Environmental Program. With the additional help we've been able to try a couple of different advertising strategies, including the event postcard that you might have noticed in your mailbox. All-in-all we have seen an increase in the number of producer attending events.

The Forage and Livestock Program was able to start a couple of new projects in 2016. We seeded a perennial forage trial at our Sedgewick site. This is part of a province wide trial that is partially supported by the Alberta Beef Producers. We also work with Alberta Agriculture and Forestry staff to be part of a province wide on-farm demonstration looking at Grazing High Legume Pastures. Our site is north of Holden. The program did end up canceling our annual silage variety trial due to the issue with the cone on our seeder. The cone is what helps deliver seed evenly to all the seed runs, as it turns out we ended up with many of the forage plots having seed in only 1 or 2 row instead of 6 because of the electric motor problems. We eventually did get the electric motor replaced on the seeder, but as with all custom build things it took some time. Eric tells me that the new to us motor came from Europe (thanks eBay!) and is usually used in RC boats. He also had to get a transformer to change the wattage so that it works with our system. All is well that ends well and it's ready for #Plant17.

We're looking forward to the 2017 Field Season and we hope to see you out at some of our Extension events this year. Remember, we do what we do to help you, so please let us know if there's something that you'd like to see or might be interested in.

Thanks
Vicki

p.s. I'm usually behind the camera so the picture is of the executive assistant Gus

Ian Murray, Chair

2016 was a good year for ARECA. We worked with our 9 members associations to deliver programs across the province.

RVTs: 5 of our member associations delivered pea, wheat, barley, oats and flax Regional Variety Trials on 22 sites across the province. Yield data is collected and distributed in the Alberta Seed Guide.

Janette McDonald, Executive Director

Pest Monitoring: As in the past, 6 of our associations worked with AAF to monitor insect infestations across the province. We monitored 8 insect pests in 260 field visits over the summer and submitted the data for inclusion in the Alberta Insect Pest Monitoring Network releases.

We launched a new website in 2016. It is cleaner, leaner, and is full of information about programs delivered by our member associations (www.areca.ab.ca).

Connections Newsletter: We created and distributed 9 newsletters with the intent of increasing the connection between our member association Boards. Each edition featured one member association. The newsletter is distributed internally to all association Board members.

Environmental Farm Plan: In 2016, we introduced the Web 3.0 edition of the EFP. As well, ARECA was instrumental in leading a movement to a national EFP. We hope to move this plan further in 2017. Late in 2016, we started preparing the Alberta EFP 5-year Business Plan for 2018-2023.

Sustainable Sourcing: ARECA was awarded Green Intern funding in 2016 and our intern has completed an excellent summary of potential global sustainability requirements and how those requirements will impact Alberta farmers.

Governance: In 2016, the ARECA Board spent time developing sound processes around how projects are approved and managed within ARECA and between ARECA and our members. Our new processes have resulted in successful programs and co-operation between our members.

Sainfoin Pasture: All associations are collaborating with ARECA and Alberta

Strategic Planning Conference: In November, ARECA hosted 35 association Board members at a conference in Lacombe. It was an excellent session and will lead to greater collaboration between our associations, government and industry in 2017.

Agriculture and Forestry (AAF) on a province-wide sainfoin pasture project. We established 10 sites and will be measuring plant health and grazing yield in 2017.

Blackleg Surveillance: ARECA and 7 associations co-operated with AAF to collect and submit samples from 171 canola fields across the province. This project is a significant benefit to canola producers and we have the opportunity to expand it in 2017 and beyond.

Project Management Training: All ARECA associations and their staff manage projects. Project Management is a valued skill. Late in 2016, ARECA paid for training of 10 staff from 7 associations. This was an excellent course. If we work at what we learned, our projects will get better and better. Some staff comments:

"We will be more organized and take less time to complete events or projects....Great course!"
"Projects will be better understood and support more buy –in."
"This was one of the best training workshops I have ever been to. "

2016 Extension Activities Report

Funding provided by: Agricultural Opportunity Fund (AOF), Local Counties and Alberta Crops Commissions

Extension is a priority for BRRG and this year, we were pleased to be able to hire Martina Alder as the assistant extension and environmental program coordinator to help with the sometimes hectic schedule due to the increased number of extension events that we are producing. In 2016, we conducted 14 events, up from 10 in 2015, including a wide variety of tours, workshops, and seminars covering various topics. As this year was designated by the United Nations as the international year of Pulses, we had some speakers that focused on pulses at our Forestburg Field Day. Note: attendance numbers do not include speakers or BRRG staff.

February 10-11 – Tactical Farming Conference at the Deerfoot Inn & Casino in Calgary.

We hosted, along with five other applied research associations, a two day conference that was focused mainly on precision agriculture but also featured speakers related to the financial and ownership part of the cropping equation. Two highlights for me were Raj Khosla's presentation (Dr. Khosla is the Founder and Founding-President of the International Society of Precision Agriculture) and our Board President, Blair Kuefler opening the conference. 60 were in attendance.

February 24 – Solar Workshop at the Ferintosh Community Hall.

Speaker funding for this event came from AgForestry and it was held in partnership with the Solar Energy Society of Alberta and the Canadian Wind Energy Association. Rob Harlan, the executive director of the Solar Energy Society of Alberta conducted a workshop on solar opportunities and issues related to siting, design, installation, and the permitting process. The economics involved was also covered. 36 were in attendance.

February 25 – Beef Information Seminar at the Viking Legion Hall.

Speakers included: Brenda Hagen - AFSC Product Coordinator – WLPIP, Grant Lastiwka - AF Forage/Livestock Business Specialist, Karin Lindquist - AF Forage/Beef

Specialist and Sean Mcgrath - Ranching Systems/Round Rock Ranching. 20 were in attendance.

March 8 – Annual General Meeting at the Stettler Agriplex

Reg Shandro of Farmacist Advisory Services Inc. spoke on farm succession and common farm family issues. 25 were in attendance.

March 10 – Crop Production Workshop at the Bawlf Community Centre.

Speakers included: Neil Blue - AF Crop Market Analyst, Manjit Deol - BRRG Field Crop Agronomist, Scott Meers - AF Insect Management Specialist and Tom Wolf - @nozzle_guy/ sprayers101.com. 20 were in attendance.

April 6 - Solar Workshop at the Castor Golden Circle Club.

This event was held in partnership with the Solar Energy Society of Alberta and the Canadian Wind Energy Association, with the County of Paintearth helping out with the speaker fees since the AgForestry funding for Rob had been fully utilized. Rob Harlan, the executive director of the Solar Energy Society of Alberta conducted a workshop on solar opportunities and issues related to siting, design, installation, and the permitting process. We also had a brief presentation from County of Paintearth resident, Jordan Weber, Starland County Economic Development Officer and director of Alberta Solar Co-op. 50 were in attendance.

June 14-15 – Grazing School for Women at Circle Square Ranch in Halkirk.

Vicki is on the planning committee for this two day event that is also hosted by nine different counties/M.D.s, as well as Cows and Fish and the Alberta Conservation Association. Highlights included tours of Natures Green Acres and Sunrise Farms in the Killam area plus information on livestock handling, sustainable beef production, farm book keeping, forages from the ground up and women in agriculture. 35 were in attendance.

July 20 – Castor/Killam Field Day Bus Tour.

This event was coordinated with Sheri Strydhorst, AF Agronomy Research Scientist. We spent the morning at the Castor Plots (2 sites) and travelled up to Sheri's Advanced Agronomy Killam Plots in the afternoon. Other speakers were Harpinder Randhawa (AAFC), Neil Whatley (AF), Manjit Deol (BRRG), Murray Hartman (AF) and Yamily Zavala (CARA). 35 were in attendance.

August 4 – Forestburg Field Day

Poster headline: Help us celebrate the International Year of the Pulses! Speakers on behalf of IYP were Robyne Bowness, AF Pulse Research Scientist and Nevin Rosaasen, Alberta Pulse Growers Policy and Program Specialist. Other speakers included Monica Klaas (Ducks Unlimited), Keith Gabert (CCC) and Manjit Deol (BRRG). 25 were in attendance.

August 16 – In the Field Soil Health School at Red Tail Farms (Castor).

Jay Fuhrer, USDA Natural Resource Conservationist from North Dakota spend the day with an enthusiastic

group teaching about how to measure the health of your soils and discussing practices that can be implemented to improve and build soil health. He highlighted the following five soil health principles: Keep the coil covered; Minimize soil disturbance; Increase crop diversity; Keep living roots in the soil; Integrate livestock. 30 were in attendance.

October 26 – Cow-Bytes Workshop at the Stettler Adult Learning Council

Barry Yaremcio, AF Beef Forage Specialist gave and overview of the Cowbytes Cattle ration balancing software and walked us through several feeding scenarios in this hands-on workshop. He also helped individual producers work with their own feed tests to balance their own rations. 14 were in attendance.

November 17 – Herd Management Seminar at the Stettler Agriplex

This beef oriented seminar featured Ann Wasko of Gateway Livestock Marketing Inc. giving us an update on and what to expect in the future in the markets; Melissa Downing, the new VBP+ coordinator explaining the new VBP+ program; Deb Wilson from BIXCO on the role of data management in public trust; and Barry Yaremcio on how to meet nutritional requirements and save money when feeding cattle. 50 were in attendance.

November 22-23 – Nicole Masters Advanced Soils School at the Vermilion Regional Centre

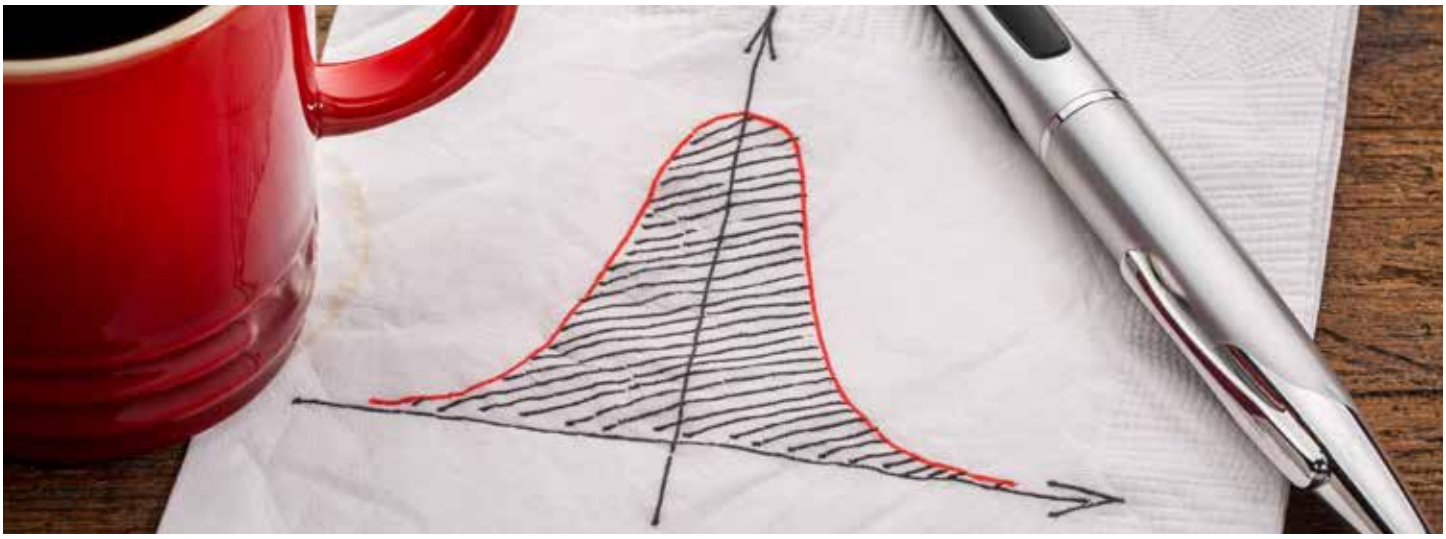
This event was co-sponsored by BRRG and the Lakeland Agricultural Research Association. We started off on November 21 with Nicole Masters of Integrity Soils (New Zealand) giving a lecture on soil health to about 70 Lakeland College students. On November 22 and 23 we had an intensive two day Soil Health School that was sold out. Topics included: Enhancing the Carbon, Nitrogen and water cycles, Reading basic Soil Tests, Cover crops and diversity, Sources of Carbon. What's good compost? , Soil minerals and the role of major nutrients and Mineral & microbial Synergy. 36 were in attendance

December 13 – Solar Workshop at the Killam Rec Centre

Speaker funding for this event came from Alberta Agriculture and Forestry and it was held in partnership with the Solar Energy Society of Alberta and the Canadian Wind Energy Association. Rob Harlan, the executive director of the Solar Energy Society of Alberta conducted a workshop on solar opportunities and issues related to siting, design, installation, and the permitting process. The economics involved was also covered. This included an updated presentation reflecting recent developments in the Solar Energy sector. 48 were in attendance.

As the extension coordinator for BRRG, I feel that we had another excellent year. We not only increased the number of events, but our average attendance also increased from 29 to 34. I look forward to working together as a team and continuing to build bridges and relationships in 2017, with government people, producers and industry people. Most importantly, I am excited about how we can better work to put this information in the hands of our members and local producers, for the benefit of our communities.

Statistical Definitions



The terms below are used throughout our report. Statistics are needed in order 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); õ - Protected under plant breeder rights; © Plant Breeder Rights Applied for.

AOV – Analysis of Variance;
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.

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

Variance or Error Mean Square (EMS) and Standard Deviation (SD) - Variance is average of squared differences from mean. By definition, Standard Deviation is the square root of Variance and variance is calculated by dividing sum of squared deviations by (n – 1).

The Standard Deviation reported on the AOV Means Table Report is the Square Root of the Error Mean Square (EMS) from the AOV table. When analyzing a trial with a Randomized Complete Block design (two way AOV), the EMS is not the same as when calculated by Excel or a scientific calculator (using a one way Analysis of Variance).

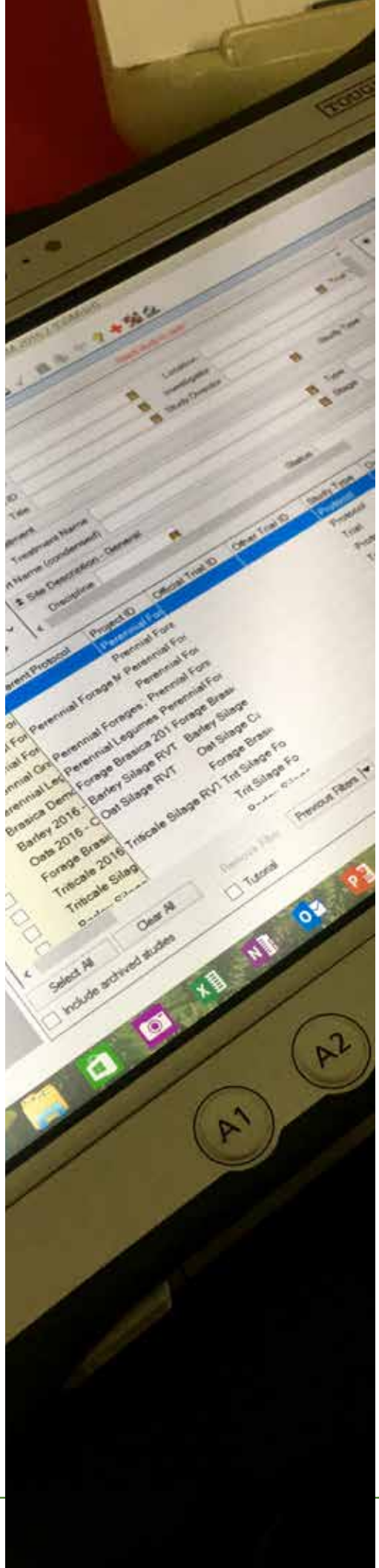
This is because in this report (using ARM software) both the Treatment and the Replicate Sum of Squares have been partitioned from the Error Sum of Squares (in a two way Analysis of Variance). In other words, the variance (error mean square) is not the same when calculated for a two way AOV as for a one way AOV.

Another way to state the difference is that a standard deviation calculated for one way AOV is the square root of the Total Sum of Squares (TSS) divided by Total Degrees of Freedom. In two way AOV because there are Treatments and Replications, the Sum of Squares for these terms needs to be removed from the TSS to determine the unexplained variance, which is the EMS.

Standard Error (SE) - The Standard Error is calculated by dividing the standard deviation by the square root of the number of replications. Smaller SE is more representative of population.

Put simply, the standard error of the sample is an estimate of how far the sample mean is likely to be from the population mean, whereas the standard deviation of the sample is the degree to which individuals within the sample differ from the sample mean. If the population standard deviation is finite, the standard error of the sample will tend to zero with increasing sample size, because the estimate of the population mean will improve, while the standard deviation of the sample will tend to the population standard deviation as the sample size increases (Accessed Jan 15, 2016 at https://en.wikipedia.org/wiki/Standard_error).

The Standard deviation (SD) does not change predictably as you acquire more data. The SD computed from a sample is the best possible estimate of the SD of the overall population. By collecting more data, you'll assess the SD of the population with more precision. But you can't predict whether the SD from a larger sample will be bigger or smaller than the SD from a small sample (www.graphpad.com/guides/prism/6/statistics/index.htm?stat_semandsdnotsame.htm Accessed-



January 15, 2016).
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 ± 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 - 17 February 2016 at http://www.biostathandbook.com/standarderror.html

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.

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.

Agronomic Trials - Castor

WHEAT, TRITICALE, BARLEY, OATS REGIONAL VARIETY TRIAL
NITROGEN RATE TRIAL WHEAT

Materials and Methods:

Location:
Castor Site RR 115 (Near Bulwark, Ab)
LLD: SW 29 38 11 W4

Experimental Design:
RCBD, 3 Replications in 28 x 4.5 ft plots
Harvest Bags are dried in a drying shed at 30°C to bring all grain to a uniform moisture for testing.

Previous Year (2015):
Canola, chopped straw, continuous rotation, yield 35 bu/ac

Production Practises:
Recommended herbicides were applied as per Alberta Crop Protection 2016, and Glyphosate was applied as desiccant on Sept. 1 2016 at a rate of 1L/ac. All of the Wheat varieties at Castor including the ESN/Urea and the Barley plots were seeded on May 12, 2016. The Oats were seeded on May 13,2016. A minimum-till six row seeder at 9in. row spacing and 1.5-2in. depth. All nitrogen was side placed as urea and P205 @ 52 lbs N/ac and 23.5 lb P205/ac.

Precipitation:
April to September – 334.5 mm
Historic Average – 309.3
Source: Alliance ACIS Weather Station

Soil Zone: Moist Dark Brown East
Analysis below based on two composite samples. Soil Organic matter was between 4.5 to 4.8 %, Clay content is between 11.9-21.6% and pH is 5.2-6.6.

Soil Test Characteristics		
Depth (in.)	0-6	6-24
pH (1S:2W) mS/cm	5.2	6.6
E.C. (1S:2W) mS/cm	.2	.4
E.C. Cal Sat. Extr.	.5	.9
Salinity	Non Saline	Non Saline
Clay %	11.9	21.6
Sand %	47.9	47.5
Silt %	40.2	11.3
Texture	Loam	Clay Loam

Please refer to a variety of sources for information on cultivars. Data from long term testing is much more reliable.

Results: CWRS wheat Castor, 2016 compared to provincial results

Castor wheat yield and index	Provincial index, Maturity and Height				
Cultivar	Bushel/acre	% of AC Barrie	Yield Category % of Barrie*	Maturity	Height (Cm)
AC BARRIE	46.7	100	100	M	87
AAC CAMERON	61.6	132 +	117 +	M	94
AAC CONNERY	52.3	112	108 +	E	81
AAC PREVAIL	46.3	99	107 +	L	96
AAC REDBERRY	53.4	114	107 +	M	83
AAC VIEWFIELD	58	124 +	116 +	L	75
CARBERRY	55.7	119 +	103	L	78
CDC BRADWELL	54.7	117 +	109 +	L	83
GO EARLY	44.6	95	104	VE	93
SY Slate	60.3	129 +	103	M	84
SY479 VB	56.8	121 +	95 -	M	94
SY637	45.1	96	103	L	91
LSD (P =.05)	7.5 bu				
CV %	8.3 %				

*Yield Category, (% of AC Barrie) Medium Yielding area, Alberta (45-75 bu/acre). AC Barrie had an average yield of 57 bushels/acre in this yield category in 2016.
A "+" sign following an index indicates that there is a significant difference in yield between this index and the check cultivar.
VB – designates variety blend to preserve the SM1 orange blossom midge tolerance gene.
New registrations without enough information to present; CDC Landmark VB (BW971), CDC Hughes VB (PT588), and Panata (PT772).

For more information refer to the Alberta Seed guide for information on past cultivars and for agronomic information such as protein comparisons, disease resistance and lodging.

CANADA WESTERN RED SPRING WHEAT

Variety	Overall Station Years of Testing	Overall Yield	Yield Category (% AC Barrie): Low < 45 (bu/ac)	Medium 45-75 (bu/ac)	High > 70 (bu/ac)	Agronomic Characteristics: Mat. Rating	Protein %	Test Weight (lb/bu)	TKW (g)	Height (cm)	Awns (Y/N)	Resistance to: Ldg.	Sprt.	Disease Tolerance: Loose Smut	Bunt	Stripe Rust	Leaf Spot	FHB
Varieties tested in the 2016 trials (Yield, significant differences and agronomic data only directly comparable to AC Barrie)																		
AC Barrie (bu/ac)		**60**	**36**	**57**	**81**													
AC Barrie		100	100	100	100	M	14	62	38	87	N	G	G	MR	I	S	MS	I
AAC Cameron VB ▲	28	116+	XX	115+	117+	M	-0.7	62	43	94	Y	G	F	S	R	S	I	I
AAC Connery (w)	42	106+	XX	108	108+	E	0	62	40	81	N	VG	G	MR	I	R	I	MR
AAC Prevail ▲	42	106+	XX	107+	107+	L	-0.6	62	39	96	Y	G	G	S	S	R	MS	I
AAC Redberry ▲	28	108+	XX	108+	107+	M	-0.1	63	40	83	Y	G	G	R	I	R	MS	I
AAC Viewfield ▲	28	117+	XX	117+	116+	L	-0.4	63	40	75	Y	VG	G	S	MR	R	I	I
Carberry	81	106+	116+	104	103	L	-0.1	62	39	78	Y	VG	F	MR	R	MR	MS	MR
CDC Bradwell ▲	28	108+	XX	109+	109+	L	-0.4	63	38	83	Y	VG	F	MR	R	MS	MS	I
Go Early ▲	42	104	XX	105	104	VE	0.3	61	40	93	Y	G	P	I	MR	I	S	I
SY Slate ▲	28	106+	XX	107	103	M	0.2	62	40	84	Y	F	P	MS	S	MR	MS	I
SY479 VB (w)	42	97-	XX	100	95-	M	0.8	62	40	94	Y	VG	VG	MS	R	S	MS	I
SY637 (w)	42	103	XX	101	103	L	0.8	62	39	91	Y	G	XX	MS	MR	MR	I	MR
Previously tested varieties (Yield, significant differences and agronomic data only directly comparable to AC Barrie)																		
5603HR	63	105+	104	107+	104+	L	-0.5	63	33	87	Y	G	VG	MS	I	MS	MR	I
5604HR CL	76	99	102	98	99	E	-0.7	63	33	87	Y	G	G	MS	I	XX	MS	I
5605HR CL	43	109+	XX	114+	106+	M	-0.2	64	38	91	Y	G	XX	R	MR	I	MS	MR
AAC Bailey	58	103	102	104	103	M	-0.6	63	37	92	N	G	G	MS	I	I	I	I
AAC Brandon	41	114+	106	117+	113+	M	-0.2	64	38	81	Y	VG	P	MR	S	MR	I	MR
AAC Elie	41	115+	107	120+	112+	M	-0.1	64	38	81	Y	G	F	I	I	MR	I	I
AAC Redwater (w)	41	103	96	106	104	E	0	64	35	87	Y	G	VG	MS	I	MR	MS	I
AC Eatonia †	78	94-	87-	97	92-	M	0.4	62	35	92	N	P	G	I	MR	I	MS	XX
AC Intrepid †	107	102	98	103	105+	E	0	62	39	90	N	G	P	I	MR	MR	MS	MS
AC Splendor †	153	95-	93-	96-	98	VE	0.9	61	37	89	N	F	F	I	I	I	I	MS
Alvena †	68	101	99	101	103	E	0.1	63	37	90	N	G	P	MR	MR	I	XX	MS
Cardale	41	105+	100	106+	105	M	-0.3	63	37	84	Y	G	G	I	S	MS	MS	MR
Coleman	43	101	XX	105	98	M	0	64	37	93	Y	F	P	S	S	MR	I	MR
CDC Abound	88	110+	108+	110+	112+	M	-0.1	63	40	82	Y	G	F	I	I	MS	MS	S
CDC Go	92	110+	103	112+	116+	M	-0.1	61	42	83	Y	G	VP	MS	I	MR	S	MS
CDC VR Morris	41	109+	105	111+	107	M		65	37	84	N	G	P	I	I	XX	I	MR
CDC Osler †	74	106+	103	106	108+	E	0	61	35	85	N	G	F	MR	MR	I	I	S
CDC Plentiful	41	106+	100	108+	106+	M	-0.2	64	35	87	N	VG	P	R	I	MR	I	MR
CDC Stanley	76	113+	114+	114+	113+	M	-0.8	63	34	87	N	G	G	MR	S	I	I	MS
CDC Titanium VB (w)	41	108+	XX	112+	103	E	0.5	65	41	87	Y	G	P	MS	I	R	MS	MR
CDC Thrive †	66	108+	107	107+	110+	M	-0.4	63	36	88	N	G	P	MR	I	I	I	MS
CDC Utmost VB	53	112+	115+	112+	111+	M	-0.2	64	36	85	N	G	G	MS	S	I	I	MS
Glenn	61	104	110+	100	104	L	-0.2	65	36	85	Y	VG	F	I	I	MR	I	I
Goodeve VB	96	105+	107+	103	104	M	-0.1	62	36	88	N	VG	G	MR	MS	I	MS	S
Harvest	118	102	98	103	104+	M	-0.1	62	36	84	N	VG	VG	MR	S	MR	MS	S
Katepwa †	278	98-	98-	97-	98-	E	-0.2	62	35	93	N	F	F	MR	MR	MS	MS	I
Lillian	87	104+	111+	100	104	M	0.2	61	37	86	N	F	G	I	MR	R	MR	S
Muchmore	53	111+	114+	107	111	L	-0.9	63	37	75	Y	VG	G	MR	R	MR	MS	MS
Peace	53	100	100	97	103	M	0.1	63	37	92	N	G	P	R	R	MR	XX	S
Shaw VB	53	112+	116+	109+	113+	M	-0.9	63	37	92	N	G	G	S	MR	I	MS	MS
Stettler	69	112+	119+	109+	111+	M	-0.3	63	37	84	Y	G	G	R	I	I	S	MS
Superb	184	112+	110+	112+	115+	L	-0.4	62	42	85	Y	G	F	I	MR	S	S	MS
SY433	44	104	101	104	104	M		64	39	95	Y	G	G	I	S	XX	I	MR
Thorsby ▲ ▲	43	106+	XX	110	105	E	-0.5	64	38	89	N	G	F	I	S	R	MS	I
Unity VB	71	110+	111+	110+	111+	M	-0.7	64	36	89	Y	F	G	MS	R	MS	MS	I
Vesper VB	45	106+	106	108+	104	M	-1.5	63	37	90	Y	F	F	I	S	S	I	I
Waskada †	67	100	101	98	102	M	0.1	64	37	92	Y	F	VG	MR	R	MS	MS	MR
WR859 CL	79	106+	110+	103	107+	M	-0.4	64	34	81	Y	G	G	R	R	I	MS	MR

REMARKS: For explanations on data summarization methods, abbreviations and other pertinent information, please see the comments at the beginning of this publication. Several CWRS varieties will be reclassified to the new CNHR wheat class, effective August 1, 2018. The varieties affected are AC Abbey, AC Cora, AC Eatonia, AC Majestic, AC Michael, AC Minto, Alvena, Alikat, CDC Makwa, CDC Osler, Columbus, Conway, Harvest, Kane, Katepwa, Leader, Lillian, McKenzie, Neepawa, Park, Pasqua, Pembina, Thatcher, Unity VB and 5603HR. For more information see the Canadian Grain Commission website www.grainscanada.gc.ca. The long term average maturity for AC Barrie is 106 days and rated as Medium (M). Fusarium Head Blight (FHB) infection is highly influenced by the environment and heading date. Under high levels of FHB all varieties will sustain damage. Moderately Resistant (MR) and Resistant (R) ratings for FHB do not equate to immunity. Varieties rated Intermediate (I) to Susceptible (S) for loose smut or bunt should be treated with a systemic seed treatment to reduce the potential for infection. AC Eatonia, Lillian, CDC Landmark VB and CDC Hughes VB have a solid stem that confers resistance to the wheat stem sawfly. 5604HR CL, 5605HR CL, CDC Abound, CDC Imagine, CDC Thrive and WR589 CL are tolerant to the CLEARFIELD® herbicides Adrenalin SC and Altitude FX. VB - designates a varietal blend to preserve the Sm1 orange wheat blossom midge tolerance gene. New CWRS registrations: AAC Redberry (BW966), AAC Viewfield (BW965), CDC Landmark VB (BW971), CDC Hughes VB (PT588), Parata (PT772), SYSlate (BW496). Insufficient data to describe: AAC Whitefox, CDC Landmark VB (BW971), CDC Hughes VB (PT588). † - Flagged for possible removal in 2018.

Results: CPSR wheat Castor, 2016 compared to provincial results

Castor CPSR wheat yield and index	Provincial index, Maturity and Height				
Cultivar	Bushel/acre	% of AC Barrie	Yield Category % of Barrie*	Maturity	Height (Cm)
AC Barrie	50.3	100	100	M	88
CARBERRY	56.9	113 +	-	M	-
AAC CROSSFIELD	58.4	116 +	119 +	M	80
AAC Crusader	-	-	116 +	M	80
AAC TENACIOUS	54.7	109	10+ +	M	97
LSD (P =.05)	5.3 bushels				
CV %	11.5%				

*Yield Category, (% of AC Barrie) Medium Yielding area, Alberta (45-90 bu/acre). AC Barrie had an average yield of 63 bushels/acre in this yield category in 2016.

A "+" sign following an index indicates that there is a significant difference in yield between t his index and the check cultivar.

The long term average maturity of Barrie is 106 days and is rated as Medium (M)
New CPSR registrations with insufficient data to describe: AAC Entice(HY 1627), CDC Terrain (HY537), and SY Rowyn (HY2013).

For more information refer to the Alberta Seed guide for information on past cultivars and for agronomic information such as protein comparisons, disease resistance and lodging.

Please refer to a variety of sources for information on cultivars

CANADA WESTERN HARD WHITE SPRING WHEAT

Variety	Overall Station Years of Testing	Overall Yield	Yield Category (% AC Barrie): Low < 45 (bu/ac)	Medium 45-75 (bu/ac)	High > 70 (bu/ac)	Agronomic Characteristics: Mat. Rating	Protein %	Test Weight (lb/bu)	TKW (g)	Height (cm)	Awns (Y/N)	Resistance to: Ldg.	Sprt.	Disease Tolerance: Loose Smut	Bunt	Stripe Rust	Leaf Spot	FHB
Previously tested varieties (Yield and agronomic data only directly comparable to AC Barrie)																		
AAC Iceberg	39	104	96	106	107	M	-0.7	64	39	86	Y	G	P	MS	I	MR	MS	I
CDC Whitewood ▲	43	107+	XX	110	105	M	-0.9	64	38	87	Y	G	G	S	S	I	MS	I
Snowbird	94	101	99	101	101	M	-0.2	62	36	89	N	G	G	MR	MS	MS	S	I
Snowstar	58	102	99	103	102	M	-0.8	64	30	82	N	G	G	MS	S	MS	I	MS
Whitehawk	42	107	112+	108+	106	E	-0.9	63	33	90	N	G	G	I	MS	MS	MS	I

REMARKS: For explanations on data summarization methods, abbreviations and other pertinent information, please see the comments at the beginning of this publication. The long term average maturity for AC Barrie is 106 days and rated as Medium (M). Fusarium Head Blight (FHB) infection is highly influenced by the environment and heading date. Under high levels of FHB all varieties will sustain damage. Moderately Resistant (MR) and Resistant (R) ratings for FHB do not equate to immunity. Varieties rated Intermediate (I) to Susceptible (S) for loose smut or bunt should be treated with a systemic seed treatment to reduce the potential for infection.Insufficient data to describe: AAC Whitefox. † - Flagged for possible removal in 2018.

CANADA PRAIRIE SPRING RED WHEAT

Variety	Overall Station Years of Testing	Overall Yield	Yield Category (% AC Barrie): Low < 45	Medium 45-90 (bu/ac)	High > 90 (bu/ac)	Agronomic Characteristics: Mat. Rating	Protein %	Test Weight (lb/bu)	TKW (g)	Height (cm)	Awns (Y/N)	Resistance to: Ldg.	Sprt.	Disease Tolerance: Loose Smut	Bunt	Stripe Rust	Leaf Spot	FHB
Varieties tested in the 2016 trials (Yield, significant differences and agronomic data only directly comparable to AC Barrie)																		
AC Barrie (bu/ac)		**61**	**42**	**63**	**90**													
AC Barrie		**100**	**100**	**100**	**100**	**M**	**13.8**	**62**	**38**	**88**	**N**	**G**	**G**	**MR**	**I**	**S**	**MS**	**I**
AAC Crossfield ▲	26	119+	XX	119+	XX	M	-1.4	62	43	80	Y	G	XX	MS	I	R	I	I
AAC Crusader	40	116+	XX	116+	117+	M	-1.2	60	41	80	Y	G	P	MR	I	XX	MS	I
AAC Tenacious VB ▲	40	107+	XX	109+	101	M	-1.3	62	39	97	Y	P	VG	R	R	MR	MS	R
Previously tested varieties (Yield, significant differences and agronomic data only directly comparable to AC Barrie)																		
5700PR *	117	117+	XX	121+	113+	L	-1.9	62	42	75	Y	VG	F	MS	R	MS	MS	MS
5702PR * †	52	117+	XX	119+	114+	L	-1.8	61	40	79	Y	G	P	MS	I	MS	I	MS
AAC Foray VB ▲	41	128+	XX	130+	120+	M	-1.7	63	51	85	Y	G	G	MS	I	MR	MS	I
AAC Penhold	41	117+	XX	121+	114+	M	-1.5	63	46	71	Y	VG	G	I	R	MR	I	MR
AAC Ryley	37	118+	XX	120+	114+	M	-0.6	60	48	82	Y	G	G	I	R	S	MS	MS
AC Crystal	278	115+	XX	119+	113+	L	XX	62	42	79	Y	G	P	I	R	S	I	S
AC Foremost *	124	116+	XX	119+	112+	L	XX	62	43	73	Y	VG	F	I	R	S	MS	S
Conquer VB*	51	121+	XX	123+	120+	M	-0.8	62	45	84	Y	F	P	MS	R	MR	I	MS
Enchant VB * †	37	115+	XX	119+	112	M	-0.7	62	48	85	Y	F	G	MS	R	XX	MS	S
SY985 *	51	112+	XX	115+	109+	M	0.1	61	44	78	Y	G	P	R	MR	XX	I	I
SY995 ▲	41	118+	XX	119+	113+	M	-1.9	63	45	79	Y	G	P	S	MR	MR	MS	MS

Remarks: For explanations on data summarization methods, abbreviations and other pertinent information, please see the comments at the beginning of this publication. Several CPSR varieties will be reclassified to the CNHR wheat class. AC Foremost, AC Taber, Conquer and Oslo will be reclassified on August 1, 2018 and AC Crystal will be reclassified on August 1, 2019. For more information see the Canadian Grain Commission website www.grainscanada.gc.ca. The long term average maturity for AC Barrie is 106 days and rated as Medium (M). Fusarium Head Blight (FHB) infection is highly influenced by the environment and heading date. Under high levels of FHB all varieties will sustain damage. Moderately Resistant (MR) and Resistant (R) ratings for FHB do not equate to immunity. Varieties rated Intermediate (I) to Susceptible (S) for loose smut or bunt should be treated with a systemic seed treatment to reduce the potential for infection. VB - designates a varietal blend to preserve the Sm1 orange wheat blossom midge tolerance gene. New CPSR registrations: AAC Crossfield (HY1632), AAC Entice (HY1627), CDC Terrain (HY537), SY Rowyn (HY2013). XX - Insufficient data to describe.

* Yield figures based on direct and indirect comparisons with AC Barrie. † - Flagged for possible removal in 2018.

Results: Oats Castor, 2016 compared to provincial results

Castor Oat yield and index	Provincial index, Maturity and Height				
Cultivar Milling	Bushel/acre	% of AC Dancer	Yield Category Medium % of AC Dancer*	Maturity	Height (Cm)
CDC Dancer	142	100	100	E	94
Akina	159	112	102	M	-88
CDC Camden	151	106	109+	L	90
CDC Norseman	151	106	100	E	94
LSD (P =.05)	21.2 bushels				
CV %	12.1%				

OATS

Variety	Overall Station Years of Testing	Overall Yield	Yield Category (% CDC Dancer): Low < 70 (bu/ac)	Medium 70-100 (bu/ac)	High 100-130 (bu/ac)	V. High > 130 (bu/ac)	Agronomic Characteristics: Maturity Rating	Test Weight (lb/bu)	TKW (g)	Height (cm)	Resistance to Lodging	Tolerance to Smuts
MILLING												
Varieties tested in the 2016 trials (Yield, significant differences and agronomic data only directly comparable to CDC Dancer)												
CDC Dancer (bu/ac)		**95**	**49**	**84**	**112**	**148**						
CDC Dancer	**129**	**100**	**100**	**100**	**100**	**100**	**E**	**42**	**37**	**94**	**G**	**R**
Akina ▲	19	110+	XX	102	112	XX	M	41	38	88	VG	XX
CDC Norseman ▲	27	101	XX	100	101	XX	E	41	38	94	G	MS
CS Camden ▲	27	109+	XX	109+	106	XX	L	41	39	90	G	I
Previously tested varieties (Yield, significant differences and agronomic data only directly comparable to CDC Dancer)												
AAC Justice	28	104	XX	99	109+	XX	M	42	36	91	G	R
AC Juniper	80	104+	102	104	106+	105+	E	41	38	94	VG	I
AC Morgan	95	111+	110+	110+	111+	115+	M	40	40	92	VG	I
Bradley	31	104+	XX	103	108	106	M	39	39	92	VG	R
CDC Boyer	89	102	103	102	100	105	M	39	42	101	G	MS
CDC Minstrel	61	104+	103	103	105	105+	M	39	38	88	VG	R
CDC Orrin	52	109+	113+	107+	107+	XX	M	41	40	84	G	R
CDC Ruffian	28	110+	110	105	116+	XX	M	40	39	94	G	R
CDC Seabiscuit	30	111+	124	106	108	108	M	39	41	101	G	MR
CDC Weaver	44	104	108+	103	100	100	M	40	43	91	F	R
Derby	79	101	103	102	96-	105	L	41	39	103	G	MS
Jordan	36	112+	112+	109+	117+	XX	VL	38	44	87	G	R
Souris	28	110+	120+	103	111	XX	M	41	34	91	VG	R
Stride	30	104+	101	102	107	106	M	42	35	104	G	R
Triactor	47	110+	109	108+	114+	110+	M	38	38	89	G	R
FEED												
Previously tested varieties (Yield, significant differences and agronomic data only directly comparable to CDC Dancer)												
AC Mustang *	108	114+	118+	112+	110+	116+	L	42	37	103	G	I
CDC Nasser	31	116+	132	107	115+	110	L	39	36	98	G	MR
Lu *	58	100	99	98	99	108	VE	41	39	85	G	R
FORAGE												
Previously tested varieties (Yield and agronomic data only directly comparable to CDC Dancer)												
CDC Baler *	42	99	96	106	96	XX	L	40	43	99	XX	S
CDC Haymaker	28	104	XX	103	105	XX	L	39	40	100	F	MR
Murphy *	51	95-	93	96	97	94	M	39	36	108	XX	S

REMARKS: For explanations on data summarization methods, abbreviations and other pertinent information, please see the comments at the beginning of this publication. The long term average maturity for CDC Dancer is 98 days and rated as Early (E). Varieties rated Intermediate (I) to Susceptible (S) for the smuts should be treated with a systemic seed treatment to reduce the potential for infection. New registrations: OT6011. Insufficient data to describe: OT6011. * Yield figures based on direct and indirect comparisons with CDC Dancer.

For a full list of registered milling, feed, and forage oat cultivars, please refer to the provincial variety fact sheets. Also refer here for agronomic information such as test weights and 1000 kernel weights.

Damaged and unpublished Variety trials
The High Yielding and Durum wheat trials and the Barley Trials were not published due to high variance. The Triticale was not harvest due to poor stand
Materials and Methods:

CANADA WESTERN SPECIAL PURPOSE WHEAT

			Yield Category (% AC Barrie):			Agronomic Characteristics:								Disease Tolerance:				
												Resistance to:						
Variety	Overall Station Years of Testing	Overall Yield	Low < 45	Medium 45-90 (bu/ac)	High > 90 (bu/ac)	Mat. Rating	Protein %	Test Weight (lb/bu)	TKW (g)	Height (cm)	Awns (Y/N)	Ldg.	Sprt.	Loose Smut	Bunt	Stripe Rust	Leaf Spot	FHB
Varieties tested in the 2016 trials (Yield, significant differences and agronomic data only directly comparable to AC Barrie)																		
AC Barrie (bu/ac)		**63**	**26**	**57**	**88**													
AC Barrie		**100**	**100**	**100**	**100**	**M**	**14.1**	**62**	**38**	**89**	**N**	**G**	**G**	**MR**	**I**	**S**	**MS**	**I**
AAC Innova	38	134+	XX	135+	135+	L	-3.2	60	41	82	Y	G	P	S	S	R	I	S
Previously tested varieties (Yield, significant differences and agronomic data only directly comparable to AC Barrie)																		
AAC NRG097	41	124+	XX	121+	126+	L	-3	63	47	80	Y	G	F	I	R	S	I	I
CDC NRG003 *†	51	121+	XX	126+	112+	M	-1.9	61	43	80	Y	G	F	MS	R	XX	MS	S
NRG010 *†	51	126+	XX	XX	XX	L	-2.6	62	41	83	Y	G	P	MS	R	R	I	MS
Pasteur *	37	137+	XX	142+	132+	VL	-2.3	62	42	82	N	VG	G	MS	S	MR	I	I
SY087	41	120+	XX	122+	114+	M	-1.4	63	40	82	Y	G	F	MS	MR	MR	I	MR

Remarks: For explanations on data summarization methods, abbreviations and other pertinent information, please see the comments at the beginning of this publication. The long term average maturity for AC Barrie is 106 days and rated as Medium (M). Fusarium Head Blight (FHB) infection is highly influenced by the environment and heading date. Under high levels of FHB all varieties will sustain damage. Moderately Resistant (MR) and Resistant (R) ratings for FHB do not equate to immunity. Varieties rated Intermediate (I) to Susceptible (S) for loose smut or bunt should be treated with a systemic seed treatment to reduce the potential for infection. New CWSP registrations: AAC Awesome (GP151), CDC Kinley (HW616) and CDC Throttle (GP131). XX-Insufficient data to describe. * Yield figures based on direct and indirect comparisons with AC Barrie. † - Flagged for possible removal in 2018.

CANADA WESTERN SOFT WHITE SPRING WHEAT

			Yield Category (% AC Andrew):			Agronomic Characteristics:									Disease Tolerance:				
												Resistance to:							
Variety	Overall Station Years of Testing	Overall Yield	Low < 45 (bu/ac)	Medium 45-90 (bu/ac)	High > 90 (bu/ac)	Maturity Rating	Protein %	Test Weight (lb/bu)	TKW (g)	Height (cm)	Awns (Y/N)	Ldg.	Shat.	Sprt.	Loose Smut	Bunt	Stripe Rust	Leaf Spot	FHB
Varieties tested in the 2016 trials (Yield, statistical differences and agronomic data only directly comparable to AC Andrew)																			
AC Andrew (bu/ac)		**83**	**35**	**75**	**116**														
AC Andrew *		**100**	**100**	**100**	**100**	**L**	**10.8**	**61**	**39**	**79**	**Y**	**VG**	**VG**	**P**	**S**	**S**	**I**	**MS**	**I**
AAC Indus	24	102	XX	102	105	VL	-0.6	62	44	87	Y	VG	VG	P	S	S	MR	I	MS
Previously tested varieties (Yield, statistical differences and agronomic data only directly comparable to AC Andrew)																			
AAC Chiffon	39	104+	106	105+	101	L	-0.4	62	46	88	Y	G	VG	P	S	S	MR	I	S
AC Meena	51	97-	101	97-	95-	L	0	62	37	80	Y	G	G	F	MS	S	MR	I	S
Sadash	51	110+	113+	107+	109+	L	0.2	63	39	82	Y	VG	VG	P	I	S	R	I	S

REMARKS: For explanations on data summarization methods, abbreviations and other pertinent information, please see the comments at the beginning of this publication. AC Andrew yields about 35% more than AC Barrie. In addition to traditional markets, SWS wheat varieties may have demand as a feedstock for ethanol production. *Maturity, resistance to lodging and sprouting are compared with AC Barrie. Varieties rated Intermediate (I) to Susceptible (S) for loose smut or bunt should be treated with a systemic seed treatment to reduce the potential for infection. New CWSWS registrations: AAC Paramount (SWS433). XX - Insufficient data to describe. * Yield figures based on direct and indirect comparisons with AC Andrew.

FEED AND FOOD BARLEY

Variety	2 or 6 row	Awn Type	Overall Station Years of Testing	Overall Yield	Yield Category (% AC Metcalfe): Low < 60 (bu/ac)	Medium 60-90 (bu/ac)	High 90-120 (bu/ac)	V. High > 120 (bu/ac)	Agronomic Characteristics: Maturity Rating	Test Weight (lb/bu)	TKW (g)	Height (cm)	Resistance to Lodging
GENERAL PURPOSE													
Varieties tested in the 2016 trials (Yield, significant differences and agronomic data only directly comparable to AC Metcalfe)													
AC Metcalfe (bu/ac)				**100**	**47**	**78**	**103**	**134**					
AC Metcalfe	**2**	**R**		**100**	**100**	**100**	**100**	**100**	**M**	**51**	**46**	**79**	**F**
Champion	2	R	166	113+	124+	113+	112+	111+	M	53	49	76	G
Claymore	2	R	42	111+	XX	110+	109+	115+	L	51	47	76	G
Oreana	2	R	42	112+	XX	109+	114+	115+	L	53	50	66	VG
Vivar	6	R	175	109+	97	105+	109+	115+	M	49	44	73	VG
Previously tested varieties (Yield, significant differences and agronomic data only directly comparable to AC Metcalfe)													
Brahma	2	R	87	111+	112+	109+	113+	111+	M	53	47	74	G
Busby	2	R	45	104+	107	103	106	103	M	53	49	78	G
CDC Austenson	2	R	65	112+	108	113+	111+	112+	L	54	46	78	G
CDC Bold †	2	R	77	106+	111+	107+	106+	102	M	53	48	72	VG
CDC Coalition	2	R	57	110+	107	112+	108+	109+	L	53	47	74	G
CDC Cowboy	2	R	75	95-	107	94-	93-	96-	L	52	55	103	F
CDC Dolly †	2	R	184	101	97	100	103+	100	M	53	49	74	F
CDC Maverick	2	S	43	95-	XX	90-	97	96	M	54	55	98	F
CDC Trey	2	R	106	103+	101	105+	101	105+	M	52	50	80	G
Canmore	2	R	40	107+	XX	104	111+	108+	M	52	49	73	G
CONLON	2	S	63	94-	97	93-	93-	96-	VE	52	52	80	G
Gadsby	2	R	45	112+	XX	114+	114+	108+	M	53	51	83	F
Ponoka	2	R	120	108+	101	107+	110+	109+	L	51	46	80	G
Seebe	2	R	229	101	97	100	102	100	VL	52	50	86	G
XENA	2	R	271	112+	111+	109+	114+	112+	M	52	49	77	G
AC Harper	6	SS	166	103+	95	96-	102	111+	M	48	40	80	G
AC Ranger	6	S	48	107+	101	99	118+	107+	L	49	43	74	F
AC Rosser †	6	S	166	108+	101	102	109+	113+	M	48	41	82	G
Amisk	6	SS	40	105+	XX	105	104	108+	M	49	46	69	VG
Breton †	6	S	42	107+	97	108	106+	110+	M	49	45	80	F
Chigwell	6	S	43	104	XX	98	106	111+	M	49	41	76	G
Muskwa	6	S	44	105+	XX	103	105	110+	M	50	42	73	G
Sundre	6	S	72	110+	100	105	112+	117+	L	51	43	86	G
Trochu	6	S	136	107+	101	102	109+	112+	M	49	41	78	G
HULLESS													
Previously tested varieties (Yield, significant differences and agronomic data only directly comparable to AC Metcalfe)													
CDC Carter	2	R	45	97-	97	99	94-	XX	M	62	39	77	VG
CDC McGwire †	2	R	107	93-	88-	93-	99	XX	M	61	39	80	VG
Falcon	6	S	181	83-	72-	83-	91-	89	E	58	35	68	VG
Tyto †	6	S	72	81-	79-	84-	96	96	M	55	40	73	VG

REMARKS: For explanations on data summarization methods, abbreviations and other pertinent information, please see the comments at the beginning of this publication. The long term average maturity for AC Metcalfe is 95 days and is rated as Medium (M). Varieties rated Intermediate (I) to Susceptible (S) for smuts should be treated with a systemic seed treatment to reduce the potential for infection. Hulless varieties leave the hull in the field and thus grain yields comparable to hulled varieties are 9-12% lower. Handling of hulless varieties should be minimized to avoid seed damage. CDC Carter, CDC McGwire, Falcon and Tyto are normal starch barleys suitable for food use. New registrations: Claymore (TR12733) and Oreana (TR12735). † - Flagged for possible removal in 2018.

FEED AND FOOD BARLEY— *CONTINUED*

	Disease Tolerance:						
					Net Blotch:		
Variety	**Loose Smut**	**Other Smuts**	**Root Rot**	**Scald**	**Spot form**	**Net form**	**FHB**
GENERAL PURPOSE							
Varieties tested in the 2016 trials (Yield, significant differences and agronomic data only directly comparable to AC Metcalfe)							
AC Metcalfe (bu/ac)							
AC Metcalfe	**R**	**I**	**I**	**S**	**I**	**S**	**I**
Champion	S	R	MR	S	I	S	I
Claymore	S	R	I	S	I	S	I
Oreana	S	R	I	S	MR	S	S
Vivar	I	R	MR	I	MR	R	S
Previously tested varieties (Yield, significant differences and agronomic data only directly comparable to AC Metcalfe)							
Brahma	MS	R	MR	S	I	I	I
Busby	S	MR	S	I	MR	MS	I
CDC Austenson	S	R	I	S	R	MS	I
CDC Bold †	MS	MR	MR	S	I	S	S
CDC Coalition	R	R	I	S	MR	S	I
CDC Cowboy	MS	MR	I	MS	MR	I	MR
CDC Dolly †	S	I	I	I	MS	S	MR
CDC Maverick	S	R	I	MS	MR	I	MR
CDC Trey	MS	R	MR	MS	R	I	I
Canmore	R	R	I	MR	MR	MS	I
CONLON	I	I	MR	S	MR	I	MR
Gadsby	R	R	I	R	MR	MS	I
Ponoka	R	R	I	MR	MR	MS	I
Seebe	S	R	I	MR	MS	S	MR
XENA	MS	MS	MR	S	I	S	MR
AC Harper	MS	I	I	I	I	I	MS
AC Ranger	MS	I	MR	MS	MR	I	S
AC Rosser †	MS	R	MR	S	MR	I	S
Amisk	S	MS	MS	I	MR	I	S
Breton †	MS	MR	I	I	MR	I	S
Chigwell	MS	MR	MS	MR	MR	I	S
Muskwa	MS	R	MS	MR	MR	MS	S
Sundre	MS	R	MS	R	I	MS	S
Trochu	MS	MR	MR	I	MR	S	I
HULLESS							
Previously tested varieties (Yield, significant differences and agronomic data only directly comparable to AC Metcalfe)							
CDC Carter	R	R	S	MS	MR	I	I
CDC McGwire †	MS	MR	MR	I	MR	I	MR
Falcon	MS	MR	I	I	I	I	S
Tyto †	S	R	I	MS	I	S	MS

FLAX

Variety	Overall Station Years of Testing	Overall Yield	Yield Category (% CDC Bethune): Low < 20 (bu/ac)	Medium 20 - 35 (bu/ac)	High 35 - 50 (bu/ac)	V. High > 50 (bu/ac)	Agronomic Characteristics: Maturity Rating	Seed Colour	Seed Size	Height (cm)	Resistance to Lodging	Disease Tolerance: Fusarium Wilt	Powdery Mildew	Quality: Oil Content (%)	ALA Content (%)	Iodine Value
Varieties tested in the 2016 trials (Yield, significant differences and agronomic data only directly comparable to CDC Bethune)																
CDC Bethune (bu/ac)		**37**	**14**	**29**	**44**	**58**										
CDC Bethune	**109**	**100**	**100**	**100**	**100**	**100**	**L**	**brown**	**M**	**57**	**G**	**MR**	**MR**	**46**	**55**	**189**
CDC Neela	24	109+	XX	115	102	XX	L	brown	M	55	G	MR	MR	46	59	194
CDC Plava ▲	24	104	XX	110	98	XX	M	brown	M	52	G	MR	XX	47	57	196
CDC Buryu ▲	16	100	XX	104	96	XX	L	brown	L	56	G	MR	MR	46	56	193
VT50	24	103	XX	105	101	XX	VL	yellow	S	51	VG	MR	XX	47	68	209
Prairie Grande	76	98-	101	102	93-	99	M	brown	M	53	G	MR	MR	46	58	193
WestLin 60	24	100	XX	103	98	XX	M	brown	M	50	G	MR	XX	46	60	198
WestLin 72 ▲	16	102	XX	100	105	XX	VL	brown	S	51	VG	MR	MR	47	57	193
Previously tested varieties (Yield, significant differences and agronomic data only directly comparable to CDC Bethune)																
AAC Bravo	23	104	XX	XX	103	104+	L	brown	L	64	G	MR	MR	45	60	194
CDC Glas	23	106+	XX	XX	106	XX	L	brown	S	61	G	MR	MR	46	57	192
CDC Sanctuary	28	105+	XX	100	100	108+	VL	brown	M	64	G	MR	MR	46	57	191
CDC Sorrel	32	104	112	104	100	99	L	brown	L	61	F	MR	MR	45	58	193
Hanley	37	97-	99	97	95	97	M	brown	M	53	VG	R	MR	45	59	198
Prairie Sapphire	23	96	XX	XX	97	101	L	brown	M	64	G	MR	MR	48	57	193
Prairie Thunder	40	99	101	98	99	99	L	brown	M	55	G	R	MR	45	58	195
Taurus	27	98-	103	97	XX	XX	L	brown	M	53	VG	MR	R	46	54	187
WestLin 71	25	95-	101	94	91-	XX	L	brown	M	56	G	MR	MS	48	61	198

REMARKS: For explanations on data summarization methods, abbreviations and other pertinent information, please see the comments at the beginning of this publication. The long term average maturity for CDC Bethune in Alberta is 110 days and rated as Late (L). All varieties are immune to flax rust New registrations: CDC Buryu (FP2316), AAC Prairie Sunshine (FP2357) and WestLin 60 (FP2388). Insufficient data to describe: AAC Prairie Sunshine.

Canola Fertility Trial – Mosaic , N Rate Canola, Lentil Phosphate demonstration, Flax RVT, WIN Canola, Cover Crop Demo

Materials and Methods:
Location: SE 5 38 11 W4

Experimental Design:
Mosaic Canola and Flax had 4 replications; N Rate Canola had 3 replications in 28x4.5 ft plots randomized in a complete block design.
Harvest Bags are dried in a drying shed at 30°C to bring all grain to a uniform moisture for testing.

Previous Year (2015):
CWRS Wheat, Chopped Straw, Continuous rotation, 50 Bu/ac yield

Production Practises:
N Rate Canola (CS2000), Mosaic Canola and maxim lentils were seeded on May 18, 2016. Flax was seeded on May 13, 2016 with 37 lbs N/ac No Phosphorous was put down. A cover crop demo was also seeded at this site.

Precipitation:
April to September – 334.5 mm
Historic Average – 309.3 mm
Source: Alliance ACIS Weather Station

Soil Zone: Moist Dark Brown East
Analysis below based on two composite samples. Soil Organic matter was between blank %, Clay content is between 11-17.1% and pH is 5.2-7.

Soil Test Characteristics		
Depth (in.)	0-6	6-24
pH (1S:2W) mS/cm	5.2	7
E.C. (1S:2W) mS/cm	.1	.4
E.C. Cal Sat. Extr.	.2	.9
Salinity	Non Saline	Non Saline
Clay %	11	17.1
Sand %	48.8	52.3
Silt %	40.3	30.6
Texture	Loam	Loam/Sandy Loam

Results:

Castor Flax yield and index	Provincial index, Maturity and Height				
Cultivar	Bushel/acre	% of CDC Bethune	Yield Category % of CDC Bethune*	Maturity	Height (Cm)
CDC Bethune	53.9	100	100	L	57
CDC Neela	57.5	107	115	L	-55
CDC Plava	53.9	100	110	M	52
Prairie Grande	49.1	91	102	M	53
Westlin 72	57.1	106	100	VL	51
LSD (P =.05)	5.9 b				
CV %	7.7 %				

The long term maturity date for Bethune in Alberta is 110 days and is rated as Late (L). CDC Buryu (FP2316), AAC Prairie Sunshine (FP2357) and Westlin 30 (FP2388) insufficient data to describe.

	Canola Fertility Trial 2016- Mosaic	
#	Fertility treatment	Yield bu/acre
1	Nitrogen only	57.0
2	MAP	58.5
3	MAP & AS	53.9
4	MAP & AS & ZnSO4	59.4
5	MESZ	54.4
6	MES15	59.0
7	MAP & AS	55.8
8	MAP & AS & MOP	59.6
9	MAP & AS & Aspire	55.8
10	EXP40	52.1
11	EXP45	53.7
12	Check(no fertilizer)	48.0
13	MAP only	47.6
	LSD (P =.05)	8.1 NSD
	CV %	10.3%

There were no significant differences in Canola yields. The lowest yielding treatments were the check treatment (no fertilizer) and the MAP treatment only.

	Canola Fertility Trial, Castor - ESN		
#	Treatment	Yield/bu/acre	Stats
1	No-Fertilizer	35.7	f
2	MAP (30 lb P2O5/acre) 15 lb SB	41.9	ef
3	Urea (20 lb N/acre) + T2	46.3	de
4	Urea (40 lb N/acre) + T2	46.1	de
5	Urea (60 lb N/acre) + T2	49.2	b-e
6	Urea (80 lb N/acre) + T2	59.3	a
7	Urea Only (54 lb N/acre)	55.2	a-d
8	Urea+ESN (20 lbs N/acre) + T2	44.4	ef
9	Urea+ESN (40 lbs N/acre) + T2	48.1	cde
10	Urea+ESN (60 lbs N/acre) + T2	55.2	a-d
11	Urea+ESN (80 lb N/acre) + T2	57.8	ab
12	Urea(60 lb N)+ MAP(40 lb P2O5)	56.1	abc
	LSD	9.1	
	CV	10.85	

A good response to Nitrogen fertilizer was noted in this trial. Yields were similar with and without ESN.

Agronomic Trials Forestburg

Field Pea Regional Variety Trials, Canola Performance trial, N rate ESN Canola, Lentil Humiliate trial

Location:
Forestburg Site East Hwy 856
LLD: SW 26 42 15 W4

Experimental Design:
The Canola Performance trial, Field Peas, N rate canola, and WIN Canola had 4 replications. Canadian Humiliate trial had 3 replications in 28 x 4.5 ft. plots randomized in a block design. The Soybeans were hand seeded as a demo plot. Harvest Bags are dried in a drying shed at 30°C to bring all grain to a uniform moisture for testing.

Previous Year (2015):
CWRS Wheat, Chopped straw, continuous rotation

Production Practises:
Peas were seeded and rolled on May 6, 2016. 24.7 lbs P2O5/ac was put down with the seed at a depth of 1.5-2 in.
The Canola Performance Trial was seeded on May 17, 2016 with 80 lb N/ac and 23.5 lbs. P2O5/ac.
Lentil Phosphorous trial (Canadian Humiliate) was seeded and rolled on May 6, 2016 and had a carbon spray applied on May 11, 2016. WIN Canola was also seeded May 17, 2016 in a row East to West. N Rate canola trial was seeded on May 17, 2016. All seeding was done with a six row seeder at 9 in row spacing.

Precipitation:
April to September – 333.2 mm
Historic Average – 309.1 mm
Source: Forestburg ACIS Weather Station

Soil Zone: Black
Analysis below based on two composite samples. Soil Organic matter was between 6.2 and 6.7 %, Clay content is between 14.3-30.7% and pH is 5.4-5.9.

Soil Test Characteristics		
Depth (in.)	0-6	6-24
pH (1S:2W) mS/cm	5.4	5.9
E.C. (1S:2W) mS/cm	.2	1.6
E.C. Cal Sat. Extr.	.5	3.5
Salinity	Non Saline	Slight
Clay %	14.3	30.7
Sand %	32.2	27.7
Silt %	53.5	41.6
Texture	Silt Loam	Clay Loam

Results:

There are no results for Field Peas due to flooding damage to the plots.
Please refer to the provincial publication.

The Nitrogen rate and ESN Trial in Canola at Forestburg was cancelled due to mechanical problems with the cone seeder, resulting in an uneven stand.

The Lentil Humalite trial could not be published due a high variability in yields. The Coefficient of Variability was 43%. The average lentil yield was low at 1133 lbs/acre, attributed in part to the wet year

Canola Performance Trial – Forestburg

The trial was sown on May 17, 2016. 80 lbs/acre of Nitrogen in the form of Urea was side banded and 24 lbs/acre of Phosphate was placed with the seed. The plot was harvested on September 26, 2016.

The trial was not included in the prairie wide medium season zone results due to seeding errors with CS2200 CL and CS 2000 cultivars.

For more information on varieties (days to maturity, lodging, height etc) go to www.canola-performancetrials.ca .

Canola Performance Variety Trial 2016 – SW 26-42-15 w of 4				
System/Cultivar	Yield (bushels/ acre)	Yield (% of 5440)	Medium Season Zone* (% of 5440)	Distributor
Clearfield				
5545 CL	72.9 ab	105	99	BrettYoung
CS2200 CL	-	-	93	CANTERRA SEEDS
DL 1504 **	69.8 a-f	101	97	DL Seeds
PV 200 CL	60.9 g	88	96	Proven Seeds/CPS
Liberty Link				
5440	69.1 a-f	100	100	Bayer CropScience
L130	64.9 c-g	94	99	Bayer CropScience
L252	67.8 a-g	98	99	Bayer CropScience
Roundup Ready				
6074 RR	72.3 a-c	104	102	BrettYoung
6080 RR	62.1 fg	89	100	BrettYoung
6076 CR	70.8 a-e	102	101	BrettYoung
CS 2000	-	-	100	CANTERRA SEEDS
V12-1***	65.9 b-g	95	100	Cargill- Victory Hybrid Canola
Pv 533 G	68.8 a-g	98	98	Proven Seeds/CPS
VR 9562 GC	70.3 a-e	102	99	Proven Seeds/CPS
74-44 BL	63.5 e-g	92	98	Dekalb
74-54 RR	64.1 d-g	93	98	Dekalb
73-75 RR	71.6 a-d	103	99	Dekalb
45H33	73.8 a	107	99	Dupont/Pioeeer
LSD	7.8 bushels			
CV %	8.1 %			

*Medium Season Zone, mean index from 9 trials across Western Canada.
5440 average yield = 60bu/acre
**Variety supported for registration by the Western Canola/Rapeseed Recommending committee
***Indicates varieties with specialty oil profiles and premiums associated with pricing
CR indicates Clubroot resistance.

Ducks Unlimited Winter Wheat Demo, Winter Wheat RVT, Large ESN-Urea Wheat Trial, Cocktail cover crop demo

Materials and Methods:
Location:
Forestburg Site West Hwy 856
LLD: SE 27 42 15 W4

Experimental Design:
RCBD, ESN-Urea has 8 replications. Winter wheat RVT had 3 replications and DU WW had 4 replications. Seeding was done with a 6 row seeder with 9 in spacing. Harvest Bags are dried in a drying shed at 30°C to bring all grain to a uniform moisture for testing.

Previous Year (2015):
Canola, h.y., Straw chopped, Continuous rotation, 45 bu/ac yield

Production Practises:
ESN/Urea trial was seeded North of the Winter Wheat site on the same quarter on May 10, 2016. The Winter Wheat RVT and Ducks Unlimited Winter Wheat was seeded on September

11, 2015. RVT wheat was seeded with 70 lbs N/ac and 22.5 lbs P205/ac.

Precipitation:
April to September – 333.2 mm
Historic Average – 309.1 mm
Source: Forestburg ACIS Weather Station

Soil Zone: Black
Analysis below based on two composite samples. Soil Organic matter was between blank %, Clay content is between 19.2-31.9% and pH is 5-7.2.

Soil Test Characteristics		
Depth (in.)	0-6	6-24
pH (1S:2W) mS/cm	5	7.2
E.C. (1S:2W) mS/cm	.3	2.1
E.C. Cal Sat. Extr.	.7	4.6
Salinity	Non Saline	Moderate
Clay %	19.2	31.9
Sand %	22.8	22
Silt %	58	46.2
Texture	Silt Loam	Clay Loam

Results:

	Wheat Fertility Trial, Castor - ESN		
#	Treatment	Yield/bu/ acre	% Protein
1	No-Fertilizer	68.0	12.9
2	MAP (30 lb P2O5/acre) 15 lb SB	65.6	13.6
3	Urea (20 lb N/acre) + T2	69.3	13.8
4	Urea (40 lb N/acre) + T2	71.6	13.2
5	Urea (60 lb N/acre) + T2	74.6	13.3
6	Urea (80 lb N/acre) + T2	74.6	13.8
7	Urea Only (54 lb N/acre)	70.5	13.0
8	Urea+ESN (20 lbs N/acre) + T2	71.7	13.2
9	Urea+ESN (40 lbs N/acre) + T2	72.5	12.6

10	Urea+ESN (60 lbs N/acre) + T2	69.8	13.4
11	Urea+ESN (80 lb N/acre) + T2	70.6	13.8
12	Urea(60 lb N)+ MAP(40 lb P2O5)	71.7	13.1
	LSD	5.9 bush-els	.93
	CV	5.8 %	4.9 %

There was very little yield response to Nitrogen or to ESN at this site.

The winter wheat trial and the Ducks Unlimited Winter Wheat Demo was not harvested due to an uneven stand. The green and yellow pea variety trial was cancelled due to heavy disease pressure.

FIELD PEA – GREEN

Variety	Overall Yield (%)	Overall Station Years of Testing	Area: 1 Yield (%)	1 Site Years	2 Yield (%)	2 Site Years	3 Yield (%)	3 Site Years	4 Yield (%)	4 Site Years	5 Yield (%)	5 Site Years	Agronomic Characteristics: Maturity Rating[1]	Vine Length (cm)	TSW[2] (g)	Standability[3] (1-9)
Varieties tested in the 2016 trials (Yield and agronomic data only directly comparable to CDC Limerick)																
CDC Limerick (kg/ha)	**4657**		**3511**		**4310**		**6047**		**4417**		**7329**					
CDC Limerick	**100**	**76**	**100**	**12**	**100**	**24**	**100**	**12**	**100**	**23**	**100**	**5**	**L**	**77**	**211**	**3.3**
AAC Radius	92-	44	94	8	90-	11	88-	6	94-	16	87	3	M	76	217	3.6
AAC Royce	96-	27	100	5	90	5	92	4	99	11	92	2	M	66	249	3.6
CDC Greenwater	106+	42	106	8	109	11	105	6	106+	14	97	3	L	74	230	2.8
Fully tested varieties: 2013 - 2014 (Yield and agronomic data only directly comparable to CDC Patrick)																
CDC Patrick (kg/ha)	**4732**		**5083**		**4031**		**6242**		**4305**		**6049**					
CDC Patrick	**100**	**109**	**100**	**16**	**100**	**34**	**100**	**16**	**100**	**32**	**100**	**10**	**M**	**79**	**186**	**4.4**
CDC Pluto	96-	52	101	8	96	17	85-	8	100	16	92	3	M	82	170	6
CDC Raezer	105	52	91	8	110	17	98	8	107	16	116	2	M	89	227	4.2
CDC Tetris	106	52	102	8	109+	17	93	8	110+	16	115+	3	L	91	215	4.4
Fully tested varieties: 2004 - 2012 (Yield and agronomic data only directly comparable to Cooper)																
Cooper (kg/ha)	**4763**		**4947**		**3672**		**5977**		**4835**		**4962**					
Cooper	**100**	**121**	**100**	**18**	**100**	**38**	**100**	**18**	**100**	**36**	**100**	**11**	**L**	**76**	**270**	**3.6**
CDC Sage	82-	31	79	3	81-	8	82-	7	84-	13	XX	XX	M	75	197	3.3
CDC Striker	96-	39	92	3	109	10	104	5	89-	21	XX	XX	M	72	255	3
Mendel	91-	38	75-	3	95	12	89-	6	91-	15	95	2	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 suceptible. XX = Insufficient data to describe; † = Flagged for removal. = Protected by Plant Breeder's Rights (PBR). 1 Maturity: E = Early, M = Medium, L = Late; 2 Thousand Seed Weight: g; 3 Standability: 1 = Erect, 9 = Flat; 4 Tolerance to: P = Poor, F = Fair, G = Good, VG = Very Good; 5 Seed Coat Dimpling: VG = Very Good (0 - 5%), G = Good (6 - 20%), F = Fair (21 - 50%).

FIELD PEA – GREEN — *CONT.*

Variety	Disease Tolerance:[4] Mycosphaerella Blight	Fusarium Wilt	Bleaching	Seed Coat Breakage	Seed Coat Dimpling[5]
Varieties tested in the 2016 trials (Yield and agronomic data only directly comparable to CDC Limerick)					
CDC Limerick (kg/ha)					
CDC Limerick	**F**	**F**	**G**	**VG**	**G**
AAC Radius	F	F	G	G	G
AAC Royce	F	F	G	F	F
CDC Greenwater	F	G	G	F	F
Fully tested varieties: 2013 - 2014 (Yield and agronomic data only directly comparable to CDC Patrick)					
CDC Patrick (kg/ha)					
CDC Patrick	**F**	**G**	**G**	**G**	**G**
CDC Pluto	F	F	G	G	G
CDC Raezer	F	G	G	G	G
CDC Tetris	F	G	G	G	G
Fully tested varieties: 2004 - 2012 (Yield and agronomic data only directly comparable to Cooper)					
Cooper (kg/ha)					
Cooper	**F**	**F**	**G**	**F**	**G**
CDC Sage	F	G	G	VG	G
CDC Striker	F	G	G	G	F
Mendel	F	F	G	F	G

FIELD PEA – YELLOW

Variety	Overall Yield (%)	Overall Station Years of Testing	Area: 1 Yield (%)	1 Site Years	2 Yield (%)	2 Site Years	3 Yield (%)	3 Site Years	4 Yield (%)	4 Site Years	5 Yield (%)	5 Site Years	Agronomic Characteristics: Mat. Rating1	Vine Length (cm)	TSW2 (g)	Stand-ability3 (1-9)
Varieties tested in the 2016 trials (Yield and agronomic data only directly comparable to CDC Amarillo)																
CDC Amarillo (kg/ha)	**5123**		**3688**		**4594**		**6715**		**5073**		**7798**					
CDC Amarillo	**100**		**100**		**100**		**100**		**100**		**100**		**M**	**85**	**226**	**2.6**
AAC Barrhead (A)	100	14	97	2	97	3	97	3	105+	5	101	1	E	80	235	3.3
AAC Carver (A) ▲	104	14	103	2	92	3	105	3	107+	5	125	1	E	85	245	3.9
CDC Inca	104	28	101	5	98	7	112+	5	104	9	109	2	M	85	232	2.2
CDC Meadow	96-	63	95	10	100	20	89-	10	95-	19	93	4	M	81	203	3.9
LN4228 ▲	93-	45	90-	8	95	13	89	7	95	14	93	3	M	69	254	2.1
Previously tested varieties																
AAC Lacombe	105+	47	107+	8	101	16	112	6	107+	14	101	3	M	73	255	2.3
AAC Peace River	92-	49	89-	8	93-	16	93	6	97	16	73	3	VE	68	217	3.8
Abarth	98-	49	101	8	106	17	88-	7	94	14	89	3	M	77	249	3.6
Fully tested varieties: 2012-2014 (Yield and agronomic data only directly compared to CDC Meadow)																
CDC Meadow (kg/ha)	**4982**		**3943**		**4277**		**6160**		**5316**		**6689**					
CDC Meadow	**100**		**100**		**100**		**100**		**100**		**100**		**M**	**81**	**207**	**3.6**
CDC Saffron	103	47	110	8	103	16	99	7	101	13	101	3	M	84	236	4.3
Hugo	93-	47	104	7	87-	15	91	8	96	14	80-	3	M	73	210	5.2
Stella NR F	80-	45	75-	7	80-	15	84-	8	80-	12	78-	3	M	95	213	3.9
Fully tested varieties: 2003-2011 (Yield and agronomic data only directly comparable to Cutlass)																
Cutlass (kg/ha)	**4485**		**3388**		**3503**		**5654**		**4816**		**3932**					
Cutlass †	**100**		**100**		**100**		**100**		**100**		**100**		**M**	**71**	**228**	**4.1**
Agassiz	103	43	99	5	103	10	102	8	104	19	XX	XX	M	77	237	2.9
CDC Hornet	107+	43	99	6	111+	14	111+	8	102	13	128	2	M	89	215	3.7
CDC Prosper	97-	44	90	4	97	12	97	9	99	18	94	1	E	73	150	3.9
CDC Treasure	100	44	96	4	103	12	99	9	100	18	116	1	E	80	217	3.4
Thunderbird	97	37	88	5	99	10	99	9	98	13	XX	XX	M	76	229	2.1
Fully tested varieties: 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 suceptible. ▲ Applied for PBR protection. A = First year entries (2016). NR = Variety not registered with CFIA. F = Forage type. XX = Insufficient data to describe. = Protected by Plant Breeder's Rights (PBR). 1 Maturity: E = early, M = medium, L = Late; 2 Thousand Seed Weight: g; 3 Standability: 1 = erect, 9 = flat; 4 Tolerance to: P = poor, F = fair, G = good, VG = very good; 5 Seed Coat Dimpling: VG = very good (0-5%), G = good (6-20%), F = fair (21-50%); 6 Green Seed Coat: G = good (0-10%), F = fair (11-25%).

FIELD PEA – YELLOW — *CONT.*

Variety	Disease Tolerance:[4] Myco-sphaerella Blight	Fusarium Wilt	Seed Coat Breakage	Seed Coat Dimpling5	Green Seed Coat[6]
Varieties tested in the 2016 trials (Yield and agronomic data only directly comparable to CDC Amarillo)					
CDC Amarillo (kg/ha)					
CDC Amarillo	**F**	**G**	**F**	**F**	**G**
AAC Barrhead (A)	F	F	G	G	XX
AAC Carver (A) ▲	F	F	G	G	XX
CDC Inca	F	F	G	G	F
CDC Meadow	F	F	G	G	G
LN4228 ▲	F	F	F	F	G
Previously tested varieties					
AAC Lacombe	F	P	G	F	G
AAC Peace River	F	F	F	G	G
Abarth	F	F	F	G	G
Fully tested varieties: 2012-2014 (Yield and agronomic data only directly compared to CDC Meadow)					
CDC Meadow (kg/ha)					
CDC Meadow	**F**	**F**	**G**	**G**	**G**
CDC Saffron	F	F	G	F	G
Hugo	F	F	G	F	F
Stella NR F	F	F	G	G	F
Fully tested varieties: 2003-2011 (Yield and agronomic data only directly comparable to Cutlass)					
Cutlass (kg/ha)					
**Cutlass † **	**F**	**F**	**F**	**F**	**G**
Agassiz	F	F	G	VG	G
CDC Hornet	F	F	F	F	G
CDC Prosper	F	G	G	F	G
CDC Treasure	F	F	G	F	F
Thunderbird	F	F	G	VG	XX
Fully tested varieties: 2000-2005 (Yield and agronomic data only directly comparable to Carrera)					
Carrera (kg/ha)					
Carrera	**P**	**F**	**F**	**G**	**XX**
CDC Golden	F	F	G	G	G

WINTER WHEAT

Variety	Overall Station Years of Testing	Overall Yield	Yield Category (% Radiant): Low < 45 (bu/ac)	Medium 45-75 (bu/ac)	High 758-105 (bu/ac)	V. High > 105 (bu/ac)	Agronomic Characteristics: Winter Survival	Maturity Rating	Protein %	Test Weight (lb/bu)	TKW (g)	Height (cm)	Kernel Type	Resis. to Ldg	Disease Tolerance: Stripe Rust	Bunt	FHB	Leaf Rust	Stem Rust
CANADA WESTERN RED WINTER																			
Yield, significant differences and agronomic data only directly comparable to Radiant																			
Radiant (bu/ac)		**76**	**37**	**63**	**87**	**114**													
Radiant	**240**	**100**	**100**	**100**	**100**	**100**	**VG**	**L**	**12**	**63**	**36**	**90**	**HR**	**VG**	**S**	**S**	**S**	**S**	**S**
AAC Elevate (P)	63	106+	106	106	106	XX	G	M	+0.3	63	39	84	HR	VG	MS	MR	I	I	MR
AAC Gateway	66	100	XX	99	102	XX	F	M	+0.9	63	33	77	HR	VG	MR	S	I	I	MR
AAC Goldrush (P)	20	101	XX	XX	105	XX	VG	M	+0.5	63	34	86	HR	G	I	S	I	R	MR
AAC Wildfire (P)	34	115+	XX	119+	115+	XX	VG	VL	+0.3	64	38	86	HR	G	R	MR	MR	I	S
AC Tempest †	117	97-	96	97	96-	99	P	VL	+1.5	63	37	91	HR	VG	MR	MS	I	S	S
CDC Buteo	189	96-	94-	97	95-	101	VG	M	+0.3	65	34	91	HR	F	S	S	MR	I	I
CDC Chase	34	102	XX	97	109	XX	F	M	+0.6	64	33	94	HR	F	MR	S	MS	R	R
Emerson	79	98	96	95	100	XX	G	M	+0.7	64	30	86	HR	G	MR	S	R	I	R
Flourish	119	100	99	98	102	104	F	E	+0.6	63	35	80	HR	VG	I	MR	S	I	I
Moats	90	104+	91	102	107+	108+	G	M	+0.7	64	33	91	HR	F	MR	MS	S	R	R
CANADA WESTERN SPECIAL PURPOSE																			
Yield, significant differences and agronomic data only directly comparable to Radiant																			
AAC Icefield (P)	30	104	XX	XX	111	XX	F	M	-0.6	63	32	82	HW	VG	R	S	MS	R	MR
CDC Ptarmigan	105	106+	102	108+	105	104	G	M	-1.7	61	34	93	SW	F	S	S	I	S	S
Peregrine †	63	108+	XX	107+	109+	XX	VG	M	-0.7	64	33	97	HR	F	MR	S	I	R	I
Pintail	79	108+	XX	109+	109+	XX	VG	L	-1.4	61	29	88	HR	G	MR	S	S	MS	MS
Sunrise	88	108+	102	106	110+	108	G	M	-0.9	61	32	89	SR	G	MR	S	XX	MR	MR
Swainson	54	111+	XX	107	115+	XX	F	M	-0.2	64	38	95	HR	F	MR	S	XX	R	R

REMARKS: Winter wheat can be grown successfully in all areas of Alberta if seeded into standing stubble within the optimal seeding date period (generally before September 15) and if there is adequate snowfall. Varieties with poor (P) winter survival are generally not suitable outside of southern Alberta. The long term average maturity for Radiant is August 10 and is rated as late (L). Fusarium head blight infection may be reduced if varieties with Intermediate (I) resistance or better are used and when recommended seeding dates are followed. Radiant and AAC Elevate have tolerance to the wheat curl mite, the vector for Wheat Streak Mosaic Virus. To preserve the effectiveness of the wheat curl mite tolerance gene, agronomic practices that eliminate the "green bridge" of plant material that serves as a reservoir for mites should be followed whenever possible. Fields in southern Alberta should be inspected in the fall for infestation by Russian wheat aphid, as it may reduce winter survival. AAC Wildfire expresses some tolerance to Russian wheat aphid. AC Tempest, Radiant and AAC Wildfire have bronze chaff at maturity. AAC Icefield is a new special purpose variety with a hard white kernel that has been granted interim registration to facilitate market research. AAC Icefield expresses high milling yield of very white flour and good gluten strength at lower protein concentrations that may be of interest in some niche markets. CDC Ptarmigan and Pintail have an awnless head which may improve palatability when harvested for forage or silage. AAC Elevate is expected to be available in fall 2017. AAC Wildfire, AAC Goldrush and AAC Icefield will not be available in 2017. New registrations: AAC Goldrush (W526), AAC Icefield (W530). † Flagged for possible removal in 2018.

Eco Buffer Shelter Belt

This year was the 2nd year of the development of the Eco Buffer Shelterbelt located behind the Flagstaff County building. Last year the site was prepped and 3 rows of trees and shrubs were planted. The different 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 an order of native flowers and shrubs was made from ALCLA Native Plant Restoration; these are an important 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. Plants were selected based on the region they were being planted and the soil conditions they would be in. With the great help of our summer students Brianna and Montana and both Eric and Vicki we planted a variety of: Prairie Crocus, Honey Suckle, Saskatoon, Milk Vetch, Shooting Star, Prairie Smoke, Golden Rod, Black Eyed Susan, Golden Bean, Prairie Goldenrod, Blue Eyed Grass and Sweet Grass. We also were lucky to receive a variety of Jack Pine, Lodge Pole Pine, White Spruce, and Willow trees from the Agroforestry and Woodlot extension Society (AWES).

As part of the project, 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 new 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, 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 the coming year, I plan to create signage showing the benefits of the shelterbelt and species affect by it and in it. We cannot wait till the snow melts away and I can see how all the plants and trees are doing after this winter.

Multispecies Cocktail Cover Mix Demonstrations

This year we had two multispecies annual cocktail cover crop mix demonstrations at the Forestburg winter wheat site and at the Castor south site. Usually just called cover mixes, crops of this nature are gaining popularity because of the interspecies synergies and interactions above and below the ground, the benefits to soil health and organic matter content and (usually) the overall increased biomass yield because plants of varying heights, leaf types and growth rates are all growing together. Another bonus of cover mixes is the idea that when you have multiple species seeded, you gain a certain amount of flexibility in terms of which individual species will thrive and contribute to the overall yield depending on what the weather and precipitation is on a given year.

Dr. Yamily Zavala from CARA supplied us with a list species and seeding rates that we used, plus we 'threw in' some extra left over soybean seed. The species grown included triticale, oats, peas, soybeans, millet, sunflower, lentils, fababeans and corn.

The demo at Forestburg did better as is was seeded earlier since we had to re-seed the Castor demo because of the cone problems the seeder was having. We collected and weighed samples from given areas at both sites but there was a great deal of variation depending on what types of plants ended up in the sample areas. To get meaningful numbers, we would have needed to take much larger sample sizes and we do not have the appropriate scale for that at the moment.

Alberta Agriculture and Forestry

HIGH LEGUME PASTURES

Advantages of High Legume Pastures


Root Systems of Native Plants

Higher quality and quantity of forage over the grazing season.

- Increased profit per acre.
- Increased production from each acre.
- Increased gain per acre per animal.
- Improved cow condition and conception rates.
- Extends the grazing season, and helps manage the summer slump.

Builds soil quality, and is a source of Nitrogen for the pasture. (The highest potential happens when the seed has been inoculated with correct bacteria).

- Nitrogen that is fixed is a symbiotic bacterial process, and root nodules are formed.
- Fixed Nitrogen is available to other forage plants through legume root cell leakage or fecal transfer.

Biodiversity of organisms above and below ground.

- Legumes with grasses bring more diversity of functional traits, and access various depths in the soil profile to capture and transfer moisture, nutrients, and enhance plant/soil/organism ecological systems.
- A healthy pasture has increased soil organism activity, insects, birds, and wildlife.

Greater stability of yield during drought.

Carbon sequestration can be improved with legumes added to grasses, and increased management.

Increase possibility for family succession on the same land area.

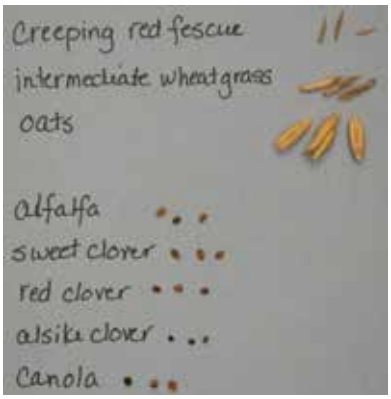
"The fear of bloat costs the livestock industry far more than bloat itself"

- Jim Gerrish


Alfalfa | Sainfoin | Red Clover | Alsike Clover

Precision seeding will ensure the seeds are placed at the correct depth, and allow for most effective soil to seed contact.

Consider the average forage seed size…



BE PREPARED

Seedbed preparation and firmness prior to seeding is critical to a successful forage establishment. Forage seed cost is not cheap, nor is taking a forage stand out of production and then putting it back. Management to ensure germination is important so that reseeding is not necessary.

Weeds

Control the weeds before you seed, especially if you are using a mixture of grasses and legumes. Make sure there have been no residual herbicides used in the past that will affect your new crop. Watch closely throughout the growing season to ensure weeds are not choking out the forage seedlings as they try to establish.

Seedbed Firmness

If land is tilled prior to seeding, the seedbed should be firm enough PRIOR to seeding so that a footprint in the soil will be no deeper than 0.65 cm. Firm soil will allow uniform, shallow coverage of the seed and prevent it from drying out. A seed bed can never be too firm before seeding. A seedbed that is not firm enough is often the reason for a stand's failure to establish.

Inoculation of Legumes

Legumes require inoculation with specific rhizobia bacteria to more greatly fix nitrogen from the atmosphere. Ensure the inoculant or pre-inoculated seed has not expired, is specific to the seed being sown, and is stored in a cool place out of sunlight prior to use.

Timing of Seeding

Depending on the emergence of weeds, spring seeding can be an effective time to seed forages. Soil temperature for germination ranges from 5°C to 20°C.

Late summer seeding is best suited to irrigation land. Timing must ensure that there is sufficient root development before freeze up so 6 to 8 weeks of growth (3+ leaf stage) is usually required.

Very late fall seeding can also work. It is important that the soil temperature is below 2°C so that germination will not occur until the following spring.

Seed Placement

Seed placement is determined by seedbed firmness, seed size, soil texture, and moisture conditions. As shown above, seed size varies.

Typically forage seed size is quite a bit smaller than most cereal grains, or even canola, so shallow placement is crucial. Smaller seeds do not have the energy to emerge from a deep planting, and is often the reason for establishment failures.

Once the seeds have germinated, it is crucial to monitor the stand throughout the growing season to ensure the young forage seedlings are not stressed by plant competition for moisture, nutrients, or most importantly lack of sunlight.

Forage and Research Association Field Days 2016

Thank you to the forage/research associations for their part in planning and hosting the High Legume Field Days during July/August 2016.

There are 14 high legume pasture sites being established across the province. 2016 was year one of this Growing Forward 2 (GF2) two year project. The main emphasis of year one was the establishment of the high legume pasture sites.

The producer/cooperators were on hand at their site for the local field day to provide first hand experiences of seeding and monitoring the stand to date. Some had challenges with seeding depth and germination. Weed control also proved to be a concern to some. Thankfully rain arrived province wide by the end of June, and the forage stands look promising for grazing in 2017.

A huge thank you is extended to the producer mentors who attended the various field days to provide their input on high legume pastures. Learning from those who have "been there, done that, and got the T-shirt" is always appreciated!

Battle River Research Group
August 2

North Peace Applied Research Association
August 25

Gateway Research Organization
August 16

Chinook Applied Research Association
August 18

Foothills Forage & Grazing Association
August 24

Stand Establishment as of August 24, 2016—Longview. Seeded June 6, 2016. Grazed lightly/quickly July for weed control.

Keep An Eye on the Stand

While the prospect of establishing a pasture was looking bleak the early part of June 2016 in Alberta, province wide moisture throughout the summer has changed everyone's perspectives.

Once the seeds have germinated, it is just as crucial to monitor the stand throughout the growing season to ensure the young forage seedlings are not too stressed by plant competition for moisture, nutrients, or most importantly—sunlight. Monitor for weeds, insects, and leaf diseases. Refer to the Alberta Forage Manual (pages 247-330) for more information on forage insects and pests.

http://www1.agric.gov.ab.ca/$Department/deptdocs.nsf/all/agdex16/$FILE/120_20-1_2009.pdf

Patience is a virtue when it comes to establishing forages. Depending on the year, it will take some time to get a firm establishment of the forage stand. It is important to continue to keep an eye on the site to know when issues arise. If the seedlings have started, and then die off due to a cut worm infestation, or lack of sun/moisture, then it will be important to know, and reseed as necessary. If the seeds have not germinated because of lack of moisture, the seeds are still there, and when the rains resume, forage growth should follow.

Successful Establishment of High Legume with Grass Pasture

Economically Viable Yield

3-5 plants/ft^2 

Fair

2 plants/ft^2 

Poor

1 plant/ft^2 

Divide plant count 1/4m^2 by 2.7 to get plants/ft^2

Frequently Asked Questions...

What is the Growing Forward 2 funded High Legume Pasture project all about?

The High Legume Pasture project is a continuation from previous team projects on extending the grazing season, and thereafter small plot trials with new sainfoin genetics. The basis of all this leadership came with key grazer cooperators who depended on high yielding and animal performing, soil enhancing pastures to "put a haystack on a cow's back". (Comment-Dick Diven).

Ten forage/research associations got onboard with this new project, found producers willing to establish, and in year two, graze the high legume pasture. It was based on thinking, "If you were seeding an ideal pasture? What would that look like? If you were managing that pasture to be the best pasture, what would that look like?" (Comments-Doug Wray, Rancher, Forage leader and Grazing mentor, Irricana). The high legume pasture project addresses the goal of a high performing, more stable yielding (even in drought) longer active growing season (summer slump and later into fall), higher profit, and higher soil health/carbon capture pasture.

When the new sainfoin variety, AC Mountainview was bred by Dr. Surya Acharya at Agriculture and Agri-Food Canada, Lethbridge, Dr. Acharya wanted to give the grazers what they were asking for. This is a non-bloating, hardy, higher yielding legume that can regrow at a rate equal to alfalfa.

This Growing Forward 2 funded project follows through on taking Dr. Acharya's research to the forage industry. Alberta Agriculture and Forestry, the Agricultural Research and Extension Council of Alberta, forage and applied research associations, producer cooperators, and several experienced high legume grazing mentors make up this team who are taking "science to practice" for testing, demonstration, discussion, learning, and consideration.

There are 13 ten acre sites establishing in 2016 and 2017, all across Alberta and into the Peace Region of British Columbia. They were each seeded to a mixture of AC Mountainview (20%), alfalfa (40%), and grass (40%) for grazing in 2017. Field days and seminars started in the summer of 2016 and will continue throughout the project. These are opportunities to see local/regional results, and to have discussions with fellow grazers who are considering this higher legume pastures, plus discuss with those already doing it with success for many years.

Although this project focusses on AC Mountainview sainfoin and alfalfa, there are several other legumes that may be good options or can be used in combination such as: newer cicer milkvetches, Birdsfoot Trefoil, Yellow Blossomed alfalfa, clovers (Alsike, Red, Kura, Sweet, Purple Prairie).

How can I get involved?

On the back page of this publication, find the association nearest you, or the one that fits your goals, and contact them. Ask questions, go to information events and field days. The associations will be happy to assist you from there.

These high legume pastures sound good, but what about the risk of bloat?

With the introduction of AC Mountainview Sainfoin into the pasture mix, the risk of bloat decreases. Sainfoin contains tannins that bind with the soluble proteins and inhibit the activity of rumen microbes; thus slowing the rate of digestion of the forages. A rapid rate of forage digestion has been determined to be a major cause of bloat.

By managing the pasture to ensure the sainfoin remains, animals will consume the tannins from the sainfoin and therefore reduce the chances of a bloat incident. The grass also present in the pasture give another non-bloat grazing forage that when consumed will reduce the amount of alfalfa consumed, and therefore also reduce potential for animal bloat.

Further tips, factsheets, and research papers containing higher legume pastures benefits and bloat information are housed on the "made in Canada for forage and beef producers" website: www.foragebeef.ca

Bloat in Pastures - http://www1.foragebeef.ca/$foragebeef/frgebeef.nsf/all/ccf126

Grazing Legumes - http://www1.foragebeef.ca/$foragebeef/frgebeef.nsf/all/frg38

Dale Kaliel and now Anatoliy Oginskyy did an analysis of fellow Alberta beef producers economics of grazing different types of pastures. It is on Ropin' the Web at: http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/econ14302

Newer pasture comparison data up to 2015 should be soon added to this site.

Sounds like a lot of work!

Managing the pasture stand over the growing season does require setting up, observation, and planning. With an effective plan that manages the forage based on environmental conditions and the farm operation, the "work" is much more observation based, and moving cattle than the physical feeding of the animals.

By managing the pasture in the summer to be as productive as possible, the livestock herd will have the best chance of increasing their body condition score during the growing season. By going into the winter months with a higher body condition score, they are carrying a hay stack on their backs, and can be fed less to reduce winter feeding costs while still maintaining an adequate plain of nutrition.

It is a change in mind set, so consider this...why not spend your time in the summer managing the forages and cow herd, and work towards a winter feeding system where the livestock do more of the work for you? Not having to start a tractor every day significantly cuts down on feeding costs, and allows you to keep more money in your pocket. Limit swath or corn grazing (using an electric fence to reduce the size of the feeding area) is a terrific way to put your cows to work. The key to swath or corn grazing is not allowing the cows to selectively graze for a long period of time so that their plain of nutrition decreases. Mineral supplementation is also important to ensure the cows receive the required CA:P ration. "It is a 365 day nutritional system with a grazing mentality." (Dale Engstrom and Gerry Taillieu)

Where can I get more information?

Check out the back page for the association nearest you.

In addition, there are a number of other places to find more information on grazing high legumes and other related topics.

ForageBeef.ca Ropin the Web

Feeding Legumes to Cattle: http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex6516

Body Condition: Implications for Managing Beef Cows: http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex3450

BCRC's Body Condition Scoring: http://www.beefresearch.ca/research/body-condition-scoring.cfm?utm_source=bodyconditionscoring.ca&utm_medium=redirect&utm_campaign=Body%20Condition%20Scoring

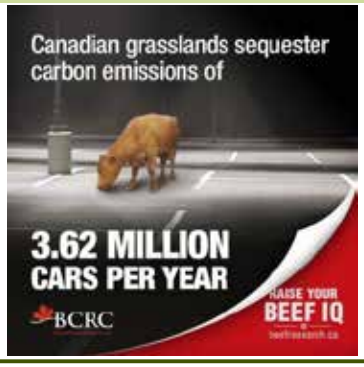
Winter Feeding Programs for Beef Cows and Calves: http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex8908

Bloat in Cattle: http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex6769

ALBERTA RANCHERS WINTER GRAZING CATTLE VIDEO SERIES

https://www.youtube.com/playlist?list=PLOUwfF01x2YVXr2cBui0KgskBRwZsKwMr

This series of 47 videos shares the personal perspectives and management practices of ranchers from across Alberta discussing their different winter grazing systems.



Keys to Successful Forage Stand Establishment

1) **Carefully choose the grass and legume species/varieties** that will work for your conditions. If the area you are seeding is prone to spring flooding, ensure there is at least one or two varieties in the mix that will tolerate those conditions. The same goes for pH and salinity.

2) **Seedbed preparation** cannot be emphasized enough. Prior to seeding, the seedbed needs to be firm to obtain maximum germination of the forage seeds. If broadcasting is your choice of seeding, the seeding rate should be increased 1.5 times. Weed control prior to seeding and then again during establishment is critical.

3) Although we do not have control of the weather, we can get a good idea of the weather patterns. **Adequate soil moisture** throughout the first year's growth of the seedlings will be important for establishment.

Forage & Research Associations Information about High Legume Pastures

Organization	Headquarters	Website Address	Phone Number
ARECA Agricultural Research & Extension Council of Alberta	Leduc	http://www.areca.ab.ca	780.612.9712
BRRG Battle River Research Group	Forestburg	http://www.battleriverresearch.com/	780.582.7308
CARA Chinook Applied Research Association	Oyen	http://chinookappliedresearch.ca/	403.664.3777
Farming Smarter	Lethbridge	http://www.farmingsmarter.com/	403.381.5118
FFGA Foothills Forage and Grazing Association	Okotoks	http://www.foothillsforage.com/	403.995.9466
GRO Gateway Research Organization	Westlock	http://gatewayresearchorganization.com/	780.349.4546
GWFA Grey Wooded Forage Association	Rocky Mountain House	http:// www.greywoodedforageassociation.com/	403.844.2645
LARA Lakeland Agricultural Research Association	Fort Kent	http://www.laraonline.ca/	780.826.7260
MARA Mackenzie Applied Research Association	Fort Vermilion	https://www.mackenzieresearch.ca/	780.927.3776
NPARA North Peace Applied Research Association	Manning	http://npara.ca/	780.836.3354
PCBFA Peace Country Beef & Forage Association	High Prairie	http://peacecountrybeef.ca/	780.523.4033
PRFA - BC Peace River Forage Association of British Columbia	Dawson Creek	http://www.peaceforage.bc.ca/	250-789-6885
WCFA West-Central Forage Association	Entwistle	http://www.westcentralforage.com/	780.727.4447
Ag Info Centre AB Agriculture and Forestry	Stettler	http://www.agriculture.alberta.ca/	310.3276 or 403.742.7901

Cicer Milkvetch | Birdsfoot Trefoil | Kura Clover | Yellow Alfalfa


Sainfoin/Alfalfa High Legume Pasture Project
Battle River
Research Group
www.battleriverresearch.com

Silage Variety Trials

Note: BRRG's portion of the Silage Variety Trial was cancelled due to failure of electric motor that runs the seed delivery system on our plot seeder. We've provide the provincial report for your reference.

AN important component of the annual feed supply for Alberta's cattle producers comes in the form of silage, green feed and swath grazing of annual cereal crops. It could be argued that there is more grain forage than cereal grain fed to take many market animals from conception to plate. Selection of annual crop varieties which produce the highest forage yield and/or nutritional quality becomes increasingly important.

Participating Organizations

- 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
- North Peace Applied Research Association, Manning AB, (780) 836-5230
- Peace Country Beef and Forage, Fairview, AB, (780) 836-3354
- Smoky Applied Research and Demonstration Association, Falher, AB, (780) 837-2900
- West-Central Forage Association, Evansburg, AB, (780) 727-4447

Major Sponsors

- Government of Alberta (Agriculture and Forestry): Doug McCaulay, AOF Coordinator
- A & L Canada Laboratories Inc.
- Davidson Seeds, Degenhardt Farms, Dyck Seed Farm, Fabian Seeds, Lindholm Seed Farm, Mastin Seeds, Solick Seeds, H. Warkentin,

Trial Information

Applied research and forage associations performed regional silage trials at eight locations throughout the province in 2016. Data from additional sites grown during the past five years has been included in the variety summaries below. The trials are intended to determine yield and nutritional values of various cereal crops and cereal/pea combinations. The tables below show a summary of data from 2012 through 2016 as compared to the control variety (in bold). Yield of the test varieties are expressed as wet tons/acre (ie. 65% moisture, typical of silage production). Data sets which did not meet minimum quality standards and variance levels were excluded.

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 and triticale), were seeded at recommended seeding density rates with fertility as determined from soil samples. The pulse mixture trial looked at increasing the nutritional value of silage, with a potential side benefit of decreasing future nitrogen costs. The pulse mix plots were cereal comparison plots were fertilized with 50 percent of the recommended fertilizer rates. Peas were seeded at 75 percent of their recommended seeding rate and cereals at 50 percent when in mixtures.

Growing conditions at the trial sites ranged from dryer than normal to excessive moisture in 2016.

Maturity, plant height and lodging were not measured in the trials as it is reported in the Cereal RVT program tables.

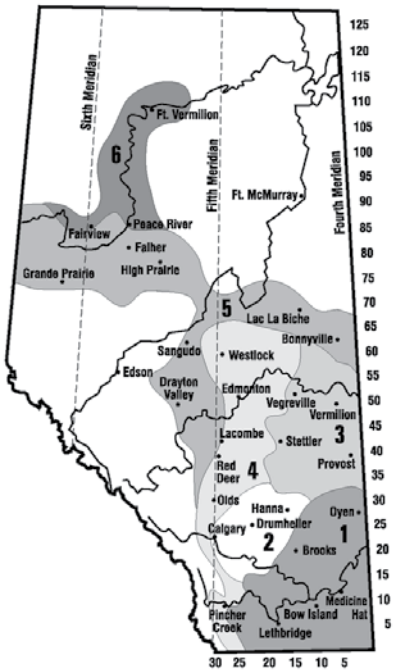
Test Yield Categories

The defined range for each Test Yield Category is provided in tons per acre. Variety yields are reported as average yields in Low, Medium and High Test Yield Categories. This allows for comparison with the check when growing conditions, management regimes or target yields are anticipated to be of low, medium or high productivity. Varieties that are statistically higher (+) or lower (–) yielding than the standard check are indicated. No symbol after the yield figure indicates that there is no statistical difference. Caution is advised when interpreting the data with respect to new varieties that have not been fully tested.

It should also be noted that the indicated yield levels are those from small plot trials, which can be somewhat higher than yields expected under commercial production. As yield is not the only factor that affects net return, other important agronomic and disease resistance characteristics should be considered. The genetic yield potential of a variety can be influenced by various management and environmental factors.

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).



OATS

Variety	Overall Yield	Overall Station Years of Testing	Area: 2	3	4	5	6	Yield Category: Low < 7.0 (t/ac)	Medium 7.1 - 10.0 (t/ac)	High > 10.1 (t/ac)	Nutritional Data: CP (%)	TDN (%)	Ca (%)	P (%)	K (%)	Mg (%)
Varieties tested in the 2016 trials (Yield, significant differences and agronomic data only directly comparable to CDC Baler)																
CDC Baler (t/ac)	**10.1**		**12.4**	**10.7**	**8.6**	**10.8**	**8**	**5.8**	**9.1**	**12.9**	**9.3**	**61.7**	**0.3**	**0.2**	**1.8**	**0.2**
CDC Baler	**100**	**33**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
AC Juniper	94-	23	91	98	98	87	103	111	84-	93	101	102	92	112	102	106
AC Morgan	100	32	102	100	92-	96	114	108	96-	101	99	101	100	114	99	97
AC Mustang	98	33	99	97	95	100	97	95	97	100	103	99	99	106	102	99
CDC Haymaker	99	28	105	96	100	97	99	105	94	100	97	100	98	100	104	98
CDC Seabiscuit	94	6	91	XX	108	78	96	78	96	99	96	100	89	94	100	100
CDC SO-1	94-	33	84	102	88	93-	96	92	94	95-	103	102	96	105	97	104
Derby	96	6	100	XX	106	89	94	89	93	101	89	100	98	99	100	110
Murphy	103	27	106	104	102	103	103	104	104	102	91	95	95	96	102	99
Waldern	104	26	100	104	98	101	115	101	112+	99	93	99	105	106	94	99
Previously tested varieties (Yield, significant differences and agronomic data only directly comparable to CDC Baler)																
Everleaf	94	5	XX	113	106	72	XX	108	76	67	96	98	105	97	110	92
Foothills	99	21	103	95	101	99	103	99	96	102	99	98	103	103	102	100
Jordan	100	20	107	92	88	100	121	102	102	96	97	100	96	105	97	112

BARLEY

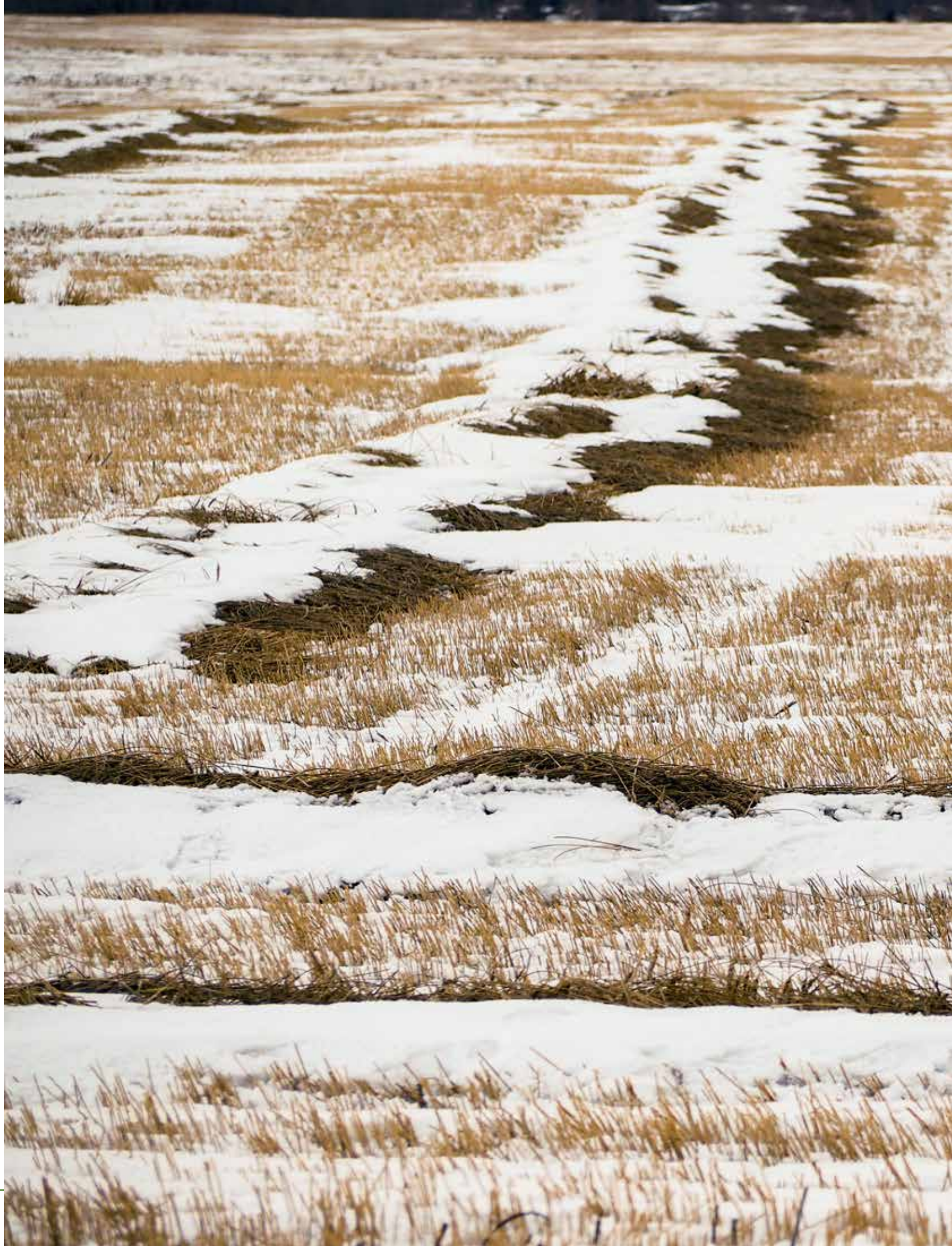
Variety	Overall Yield	Overall Station Years of Testing	Area: 2	3	4	5	6	Yield Category: Low < 8.0 (t/ac)	Medium 8.1 - 12.0 (t/ac)	High > 12.1 (t/ac)	Nutritional Data: CP (%)	TDN (%)	Ca (%)	P (%)	K (%)	Mg (%)
Varieties tested in the 2016 trials (Yield and agronomic data only directly comparable to CDC Austenson)																
CDC Austenson (t/ac)	**10.8**		**11.8**	**12.1**	**11**	**11.5**	**8**	**6.7**	**9.3**	**12.8**	**10.1**	**67.9**	**0.3**	**0.2**	**1.3**	**0.2**
CDC Austenson	**100**	**35**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Amisk	90-	23	102	92-	91	88-	83-	85	93	90-	104	99	132	106	107	109
CDC Coalition	92-	27	92	93	92	86-	102	92	92	92-	102	100	104	107	106	99
CDC Cowboy	102	27	102	103	98	103	100	106	99	100	95	98	117	107	110	115
CDC Maverick	103	29	105	96	96	104	108	111+	102	101	95	98	123	106	96	116
CDC Meredith	102	16	114	106	93	99	103	111	102	100	95	97	97	98	101	91
Canmore	98	16	105	99	93	99	97	101	93	99	100	99	119	103	98	104
Champion	102	16	104	97	100	102	106+	106	101	101	98	99	105	97	104	100
Claymore	100	16	114	102	97	100	94	106	87	103	93	96	122	93	98	100
Conlon	86-	21	82	95	86	79-	92	80-	80-	91-	99	101	128	111	101	104
Gadsby	100	27	103	106	94	100	101	104	101	98	95	99	129	99	100	103
Sundre	92-	27	97	93	87-	88-	96	86-	96	93-	102	99	134	104	114	115
TR13740	100	16	103	92	99	99	107	95	99	101	99	97	105	97	104	92
Previously tested varieties (Yield and agronomic data only directly comparable to CDC Austenson)																
Busby	93-	19	91	98	71	96	88	86-	95	97	105	99	128	100	100	103
Chigwell	90-	19	80	95	87	86-	97	91-	82-	91-	106	99	152	101	105	116
Muskwa	90-	13	101	93	XX	86-	91	86-	91	91-	114	100	167	107	121	127
Ponoka	96	19	90	100	100	96	95	96	94	97	101	99	148	103	104	115
Ranger	95	13	104	99	XX	96	88	85-	97	99	109	98	171	101	128	131
Seebe	96-	19	95	103	92	95-	95	95	96	97	109	96	136	109	113	103
Trochu	88-	18	XX	91	73	91-	85-	82-	89	92-	103	101	139	107	109	119
Vivar	93-	19	95	99	78	92-	93	90-	98	93	108	100	144	99	104	123
Xena	95-	19	87	101	84	92-	101	96	90	95	106	99	111	105	102	106

TRITICALE

Variety	Overall Yield	Overall Station Years of Testing	Area: 2	3	4	5	6	Yield Category: Low < 8.0 (t/ac)	Medium 8.1 - 12.0 (t/ac)	High> 12.1 (t/ac)	Nutritional Data: CP (%)	TDN (%)	Ca (%)	P (%)	K (%)	Mg (%)
Varieties tested in the 2016 trials (Yield and agronomic data only directly comparable to Taza)																
Taza (t/ac)	**10.7**		**12.3**	**12.3**	**8.8**	**10.4**	**9.5**	**6.3**	**10.7**	**14.5**	**8.8**	**62.8**	**0.2**	**0.2**	**1.3**	**0.1**
Taza	**100**	**37**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
94I043057	100	7	103	XX	110	93	101	89	103	100	106	102	91	102	90	108
Bunker	99	29	99	93	111+	99	100	106	98	98	103	99	111	96	97	115
Sunray	101	30	97	100	105	100	105	99	102	100	104	104	105	103	103	109
Tyndal	99	36	98	105	109	96-	96	100	98	99	103	101	101	102	97	105
Previously tested varieties (Yield and agronomic data only directly comparable to Taza)																
AAC Chiffon	111	8	124	123	118	92	126	105	113	114	97	101	88	97	106	108
AAC Innova	104	8	121	119	123	83	102	95	107	107	108	100	87	106	109	107
AAC Ryley	97	8	108	104	87	87	110	86	100	101	103	100	95	106	89	117
AC Ultima	103	7	104	98	120	100	XX	109	100	104	110	100	101	93	97	122
Pasteur	94	8	110	96	97	84	103	91	99	91	107	103	96	99	107	117
Pronghorn	102	21	107	103	114	99	101	108+	99	103	103	100	102	99	109	106
Sadash	102	8	111	102	109	91	121	101	108	97	99	99	88	91	110	105

PULSE MIXTURES

Variety	Overall Yield	Overall Station Years of Testing	Area: 2	3	4	5	6	Yield Category: Low < 8.0 (t/ac)	Medium 8.1 - 10.0 (t/ac)	High > 10.1 (t/ac)	Nutritional Data: CP (%)	TDN (%)	Ca (%)	P (%)	K (%)	Mg (%)
Varieties tested in the 2016 trials (Yield and agronomic data only directly comparable to CDC Austenson)																
CDC Austenson (t/ac)	**7.4**		**5.3**	**XX**	**XX**	**7.2**	**8.7**	**5.2**	**8.9**	**XX**	**10**	**65.9**	**0.3**	**0.2**	**1.4**	**0.2**
CDC Austenson	**100**	**5**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
CDC Baler	116	5	111	XX	XX	108+	126	111+	119	XX	95	96	113	110	106	124
Taza	109	5	110	XX	XX	104	114	109	110	XX	86	96	77	104	103	89
CDC Austenson/CDC Horizon	105	5	109	XX	XX	100	107	108	102	XX	101	97	156	102	111	133
CDC Austenson/CDC Meadow	101	5	105	XX	XX	96	104	104	99	XX	113	77	165	106	106	164
CDC Baler/CDC Horizon	101	5	111	XX	XX	102	96	113	94	XX	109	94	173	101	123	145
CDC Baler/CDC Meadow	103	5	105	XX	XX	102	103	108	100	XX	107	96	164	105	120	144
Taza/CDC Horizon	108	5	96	XX	XX	105	119	104	111	XX	116	96	179	106	106	137
Taza/CDC Meadow	100	5	99	XX	XX	97	104	104	98	XX	101	95	194	98	103	145
Varieties tested in the 2012 - 2014 trials (Yield and agronomic data only directly comparable to Vivar)																
Vivar (t/ac)	**8.6**		**7.9**	**11.2**	**4.4**	**9**	**8**	**5.8**	**9.7**	**10.3**	**9.4**	**63.5**	**0.5**	**0.2**	**1.2**	**0.2**
Vivar	**100**	**19**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Murphy	119+	18	102	106	158	123+	100	129	108	125+	88	94	77	99	129	88
Pronghorn	111	19	98	96	109	116	114	106	105	122	96	101	63	105	103	75
Murphy/40-10	105	12	XX	90	132	102	92	122	86	113	142	98	161	129	117	141
Pronghorn/40-10	104	12	XX	97	112	105	93	110	88	122	125	98	150	115	103	134
Vivar/40-10	97	12	XX	68	108	92	121	114	84	97	140	98	170	107	108	141
Murphy/CDC Horizon	112	19	82	106	144	113	102	121	97	120+	114	94	130	100	124	114
Pronghorn/CDC Horizon	111	19	85	98	133+	111	117	120	101	112	125	98	143	105	105	106
Vivar/CDC Horizon	98	19	94	99	112	96	94	103	87-	105	128	97	162	101	107	116
Murphy/CDC Meadow	105	7	74	105	XX	117+	103	96	94	119+	104	95	116	101	123	95
Pronghorn/CDC Meadow	101	7	81	91	XX	109	118	107	95	101	122	99	124	113	105	95
Vivar/CDC Meadow	99	7	92	94	XX	104	98	101	98	98	115	100	187	89	98	119



WEATHER DATA

Many newscasters commented that 2016 was a "year to forget" with the unsavory US election campaign and the Syrian refugee crisis dominating the headlines. Many prairie farmers may feel the same way about 2016, with a poor harvest season including snowfall on the Thanksgiving weekend in October. This is the first time in many years that there are substantial acres of unharvested Canola and wheat in East Central Alberta, the area west of Edmonton and many areas of Saskatchewan.

Weather conditions were good for the first half of May for seeding. However, after around May 19 there was rainfall on the majority of days until the end of the month. Referring to the weather charts, rainfall in late May ranged from 78 mm at Kessler (East of Castor) to 110 mm at Holden.

Any crops not seeded before this ended up being sown on the late side. There were many fields of Canola still in bloom in late July.

In August there was a window of opportunity to harvest field peas in mid-August. But, after August 22 there were several days of rainfall that shut down harvest. Thus, in many pea fields, combining was delayed until into September.

September continued with the same pattern of rainfall on many days until the middle of the month, after which the majority of the 2016 harvest was conducted. In some areas there were combines parked for the whole month of October, with more harvest occurring in November and even December.

Some producers were fortunate enough to be able to finish harvest. More producers were able to do so in Paintearth County. Around October 9th, precipitation started to occur as snowfall, with amounts large enough to cover swaths and lodge standing crops. Late in October there were a few days without precipitation, but conditions were too cool for much snow melt to happen.

In some areas of the prairies, warmer temperatures in November allowed for some fields to be taken off. How much is left? Estimates reported in the Western Producer on January 12 are that 1.5 million acres of crop were left in the field in Saskatchewan in December. The value of unharvested grain could be $2 billion in Saskatchewan and$1.6 billion in Alberta. (Western Producer December 22)

It is uncertain at this time what the quality is, and what will be the amount of grain harvested in the spring. Regardless, many producers will have some harvesting to do in the spring order to get the next crop in the ground. Hopefully it will be an early spring with some good drying weather.

Alliance weather data, April to October 2016

Month	Precip. mm	Precip long term AVG	Mean Minimum Temp C	Mean Maximum Temp C	Mean Temp C	Mean Temp Long Term	GDD*	GDD* Long Term AVG
April	26.4	24.6	-0.4	14.7	7.3	4.1	86.1	48.8
May	93.2	41.6	4.3	18.3	11.6	10.5	281.9	226.6
June	70.4	76.8	8.6	23.3	16.1	14.8	609.6	519.8
July	69.1	74.7	11.0	23.9	17.2	17.2	994.5	896.7
August	66.2	53.9	9.1	23.0	16.0	16.3	1338.1	1247.0
September	15.4	37.2	3.0	18.1	10.5	11.0	1505.6	1433.2
October	23.8	16.7	-2.1	6.1	1.8	4.8	1518.5	1492.6
Total mm	364.5	325.5						
Total Inches	15.2	13.6						

In 2015 There was 316mm of rainfall in this period.

Forestburg weather data, April to October 2016

Month	Precip. mm	Precip. long term AVG	Mean Minimum Temp C	Mean Maximum Temp C	Mean Temp C	Mean Temp Long Term	GDD*	GDD long Term AVG
April	16.3	22.7	-0.9	15.2	7.5	4.4	86.1	48.8
May	101.1	40.6	4.3	18.7	11.8	10.8	281.9	226.6
June	36.3	75.6	8.9	23.3	16.2	15.1	609.6	519.8
July	76.4	76.7	10.7	23.9	17.2	17.3	994.5	896.7
August	92.8	55.4	8.6	22.9	15.8	16.4	1338.1	1247.0
September	23.8	37.8	3.4	18.2	10.6	11.2	1505.6	1433.2
October	37.4	15.9	-2.1	5.9	1.6	5.1	1518.5	1492.6
Total mm	384.1	324.7						
Total inches	16.0	13.5						

In 2015 there was 297mm of rainfall during this period.

Holden weather data, April to October 2016

Month	Precip. mm	Precip. long term AVG	Mean Minimum Temp C	Mean Maxi-mum Temp C	Mean Temp C	Mean Temp Long Term	GDD*	GDD long Term AVG
April	13.8	23.4	-1.0	13.9	6.5	3.8	66.5	43.7
May	110.7	39.7	3.7	18.0	11.3	10.4	251.0	217.9
June	68.4	73.7	8.7	22.1	15.5	14.5	562.9	503.9
July	102.4	80.6	10.9	22.8	16.6	16.7	930.2	866.6
August	44.5	58.7	8.9	22.0	15.3	15.7	1254.8	1199.4
Septem-ber	29.1	37.3	3.6	17.0	10.0	10.5	1413.7	1371.3
October	40.2	16.2	-2.3	4.9	1.1	4.3	1420.9	1421.1
Total mm	409.1	329.6						
Total inches	17.0	13.7						

In 2015 there was 267mm of rainfall during this period.

Kessler weather data, April to October 2016

Month	Precip. mm	Precip. long term AVG	Mean Minimum Temp C	Mean Maxi-mum Temp C	Mean Temp C	Mean Temp Long Term	GDD*	GDD long Term AVG
April	32.6	25.2	-0.6	14.2	7.2	4.0	76.8	47.9
May	78.3	40.6	4.1	18.3	11.6	10.4	269.4	223.8
June	41.4	76.5	8.0	22.9	16.0	14.7	583.9	515.7
July	67.7	69.6	11.0	24.1	17.4	17.2	971.8	893.2
August	45.4	52.6	9.1	23.1	16.0	16.3	1315.9	1244.7
Septem-ber	14.6	34.1	3.3	18.7	10.8	10.9	1496.8	1428.0
October	26.0	16.5	-1.8	6.2	2.0	2.0	1508.7	1484.2
Total mm	306.0	315.1						
Total inches	12.8	13.1						

In 2015 there was 394mm of rainfall during this period.

Insect survey results - 2016 BRRG

Bertha armyworm (BAW)

Bertha armyworm is very cyclical. In order to catch outbreaks and help producers minimize losses it is necessary to maintain a good monitoring system using pheromone traps. The number of moths caught in the traps informs us of the risk of damaging populations with a 3 to 5 week lead time. These numbers are generated from paired pheromone traps in individual fields, except in the Peace River region where only 1 trap is used to reduce impact on native pollinators.

Bertha armyworm populations are normally kept in check by such factors as weather and natural enemies. Potential damage may be more or less severe than suggested by the moth count data depending on weather and crop conditions and localized population dynamics. Research has clearly shown that very few fields are ever affected in an area with moth catches less than 300. Even at higher moth counts field scouting is critical for pest management decisions because experience has shown that field to field and even within field variations can be very large.

Cabbage seedpod weevil (CSPW)/Canola insects

In southern Alberta, including all counties south of and touching Highway 1, the earliest flowering canola crops will be at the highest risk from cabbage seedpod weevil and should be monitored very closely.

Cabbage seedpod weevil overwinters as an adult so the risk of infestation is further indicated by the adult population of the preceding fall. Winter condition also appear to have an impact on populations with mild winter favoring build-up of populations and expansion of their range.

These numbers are generated from sweep net samples (180 degree sweeps).

We track the population of other insects in these sweeps as well. These go into long term data sets that will help us research their population trends over time. from individual fields.

Diamondback moth (DBM)

It is generally accepted that diamondback moth adults don't overwinter in the prairies and that most infestations occur when adult moths arrive on wind currents in the spring from the southern or western United States or northern Mexico. In mild winters there is suspicion that diamondback moth do overwinter in Alberta.

To assess the population, a network of 35 monitoring sites has been established across the province. This network is meant to act as part of an early warning system for diamondback moth and should be used in conjunction with crop scouting.

Wheat midge (WM)

Wheat midge is an insect that increases in numbers in wet years. Numbers can vary drastically from field to field and we try to sample wheat adjacent to the previous years' wheat in order to pick up populations if they are present. There is no definitive way to know exactly the risk in any given field so field scouting when the wheat comes into head is critical. The numbers shown here give a general trend of midge populations. Individual fields will have a different risk.

These numbers are generated by taking soil samples from wheat fields after harvest using a standardized soil probe.

Alberta Insect Pest Monitoring Network

Flagstaff

Bertha armyworm (BAW)

LLD	Trap total	Trap average
SW-26-42-15-W4	31	15.5

Reporting period: June 6-July 17, 2016

Diamondback Moth (DBM)

LLD	Trap total	Trap average
SW-26-42-15-W4	17	8.5

Reporting period: May 1-June 5, 2016

Wheat Midge (WM)

Quarter	Section	Township	Range	Meridian	Viable	Not Viable	Parasitoid	Total
w	20	39	12	4	0	0	0	0
s	17	41	10	4	1	0	0	1
nw	6	45	16	4	1	0	2	3
se	1	44	12	4	0	0	0	0
sw	14	40	13	4	0	0	0	0

The risk level as shown on our maps is as follows:

- 0 midge will be displayed as light grey (No infestation)
- 2 or less midge will be shown as dark grey (<600/m²)
- 3 to 5 will be shown as yellow (600 to 1200/m²)
- 6 to 8 will be shown as orange (1200 to 1800/m²)
- 9 or more will be shown as red. (>1800/m²)

Paintearth

Bertha armyworm (BAW)

LLD	Trap total	Trap average
SE-5-38-11-W4	165	82.5

Reporting period: June 6-July 17, 2016

Wheat Midge (WM)

Quarter	Section	Township	Range	Meridian	Viable	Not Viable	Parasitoid	Total
se	23	39	11	4	0	0	0	0
se	26	38	11	4	0	0	0	0
ne	16	38	15	4	0	0	0	0
ne	8	37	12	4	0	0	0	0
ne	19	38	11	4	0	0	0	0
n	33	39	16	4	0	0	0	0

Flagstaff

Cabbage seedpod weevil (CSPW)/Canola insects

Quarter	Section	Township	Range	Meridian	#Sweeps	CSPW	Lygus Nymph	Lygus Adult	Leafhopper	Flea beetle	Red turnip beetle	DBM larva	DBM adult
sw	28	41	10	4	25	0	0	0	0	0	0	1	0
se	16	42	15	4	25	1	0	1	0	0	0	0	0
se	14	44	12	4	25	0	0	0	0	0	0	0	0
se	24	44	15	4	25	0	0	0	0	0	0	0	0
nw	16	44	10	4	25	0	0	0	0	0	0	0	0

Paintearth

Cabbage seedpod weevil (CSPW)/Canola insects

Quarter	Section	Township	Range	Meridian	#Sweeps	CSPW	Lygus Nymph	Lygus Adult	Leafhopper	Flea beetle	Red turnip beetle	DBM larva	DBM adult
nw	7	37	15	4	25	3	0	2	0	1	1	2	0
ne	12	39	13	4	25	3	0	1	0	0	0	3	0
nw	15	39	14	4	25	0	0	4	0	0	0	1	0
sw	25	36	14	4	25	8	0	1	0	2	0	0	0
se	5	38	11	4	25	1	0	3	0	0	0	0	0


CBA PLAVA

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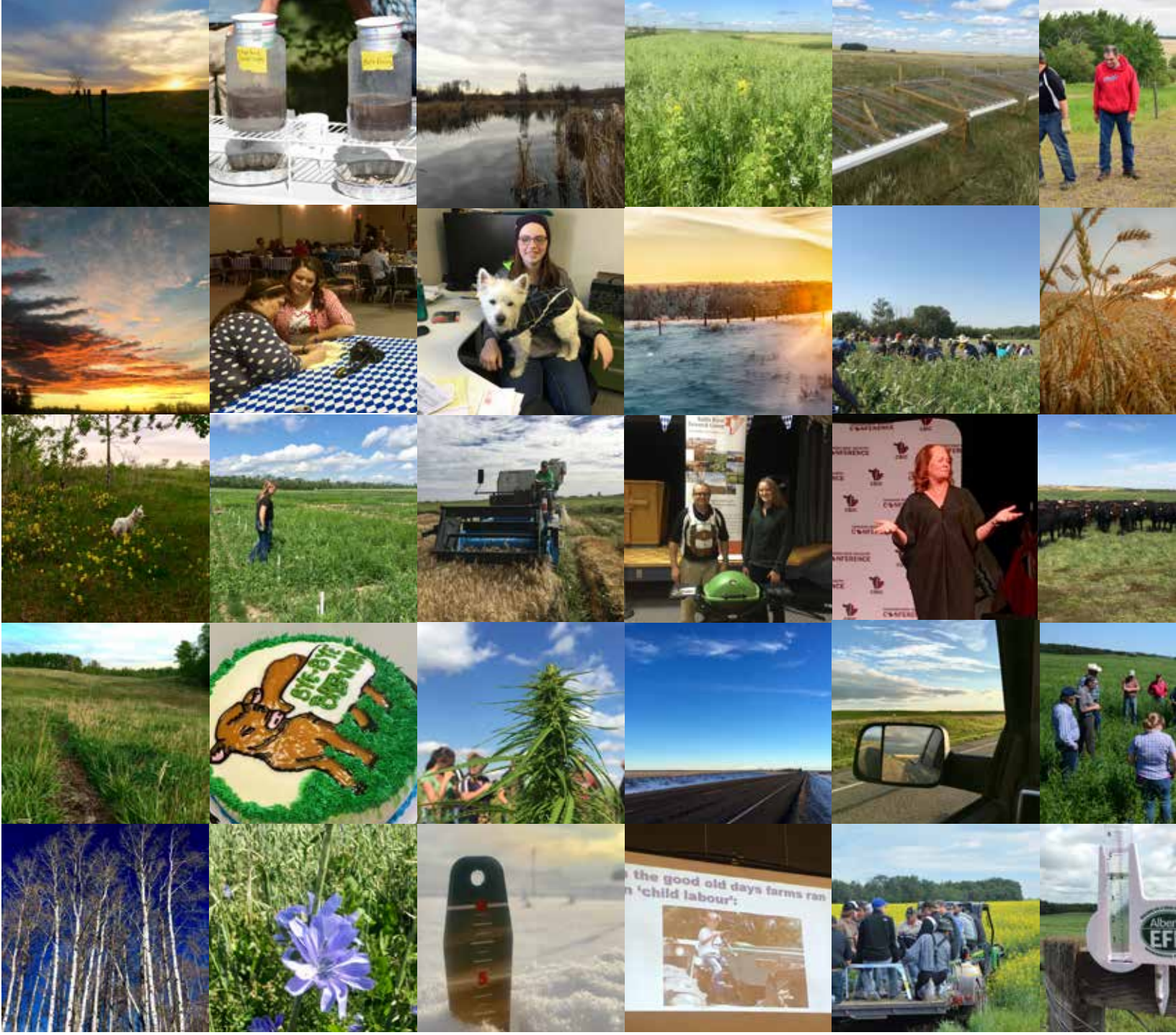

Box 339
4804-43 Ave
Forestburg, AB T0B 1N0
Ph: 780.582.7308