2018

ANNUAL REPORT

What you see depends on how you view the world. To most people, this is just dirt. To a farmer, its potential.

Doe Zantamata

WEST-CENTRAL FORAGE ASSOCIATION

2019 WCFA Annual General Meeting

Darwell, Alberta
March 19, 2019

Schedule of Events

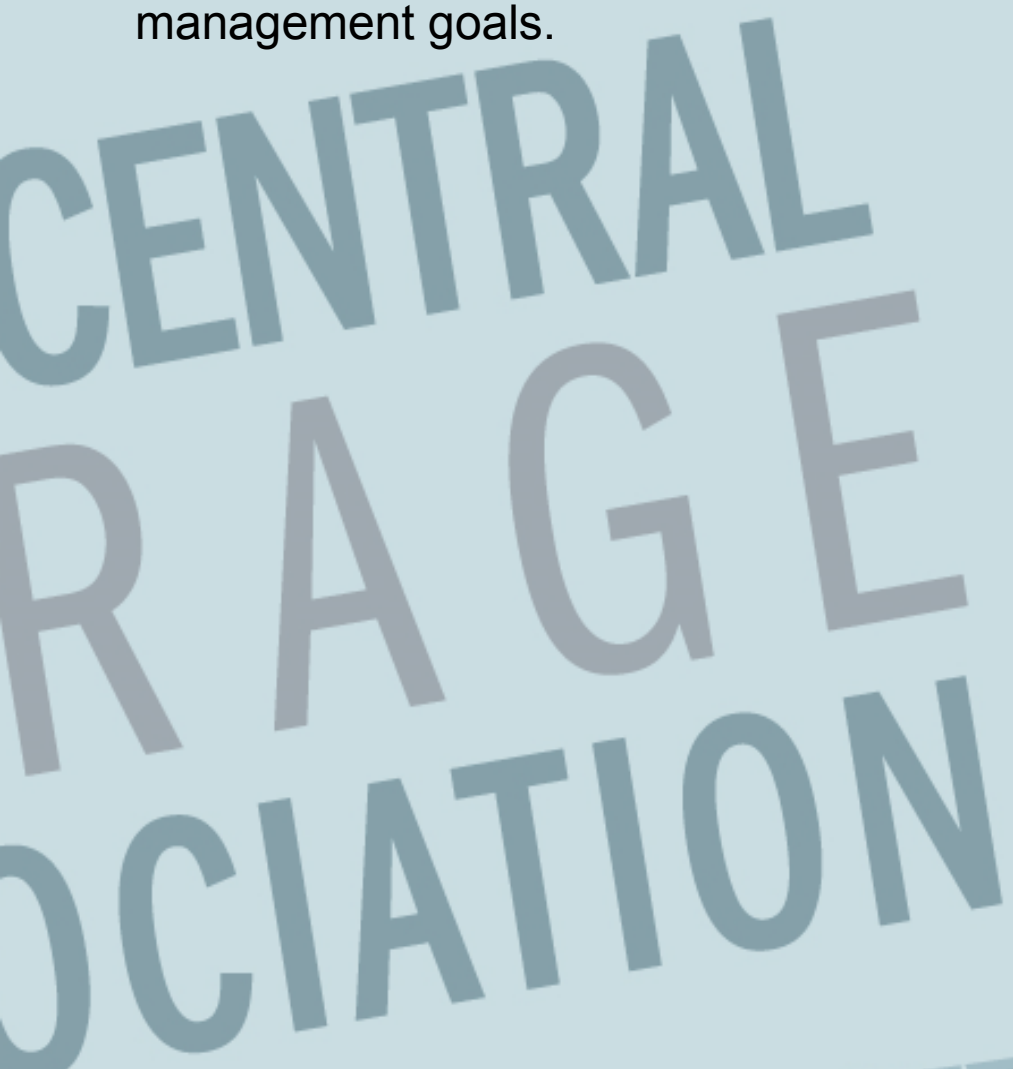
4:00PM Registration
4:30PM 2018 Update Presentations
5:00PM Annual General Meeting
6:00PM Dinner—Catered by Cobblestones (Drayton Valley)
7:30PM The Legacies Band, a local country/rock group

Vision Statement

Expand our capacity to connect and develop our community through information exchange.

Mission Statement

West-Central Forage Association enhances forage system knowledge to enable the achievement of integrated farm management goals.



Box 360
Evansburg, AB
T0E 0T0

5009, 45 Ave
Entwistle

(780) 727-4447

PRESIDENT'S MESSAGE

I have a purebred registered cattle operation raising Red & Black Angus, Simmental and Hereford cattle. My wife Tanya and our children are active in helping with the success of the operation. I am very pleased to have three generations farming and raising cattle together, and some of the fourth generation are showing great interest in being "future farmers".

I came into the office wanting to put a poster up for our bull sale five years ago and haven't looked back. That year I was voted onto the board and I have gone from being a board member, to vice-president last year, to president this year. I was interested in research and extension work that WCFA was doing.

In the last two years producers have faced a lot of challenges, from some areas being too wet, to some too dry and only within an hours distance of each other. This is a learning opportunity for us producers and this is what it's about. This year we started doing tours of board of directors operations and this has been a valuable asset to us. We have been able to see different operations and different ways of doing things. Next year we are looking forward to going more into cost analysis.

WCFA will be saying goodbye this year to long time board member Dale Engstrom. Dale has been such a valuable asset to this organization. His financial expertise and knowledge of nutrition has been invaluable. The next director that takes over Dale's role has big shoes to fill, we sure hope he comes back soon.

I like the changes WCFA has been moving towards in the last couple years. We are starting to get back to grassroots basics of farming production and improving the farm. The member needs assessments that staff conducted last year has really helped direct our future projects.

I want to thank the staff at WCFA for their commitment to WCFA and the operations. The atmosphere amongst the staff is positive and encouraging. They put in long hours, with tight deadlines. They have done a great job and have gone above and beyond the boards expectations. Their personal passion for agriculture shines through in their work being delivered. An enormous congratulation and thank you need to go out to Melissa, Fito, and Rachael.

In closing, I look forward to another year of learning and being part of this great organization, full of innovative like-minded producers.

Grant Chittick
President West-Central Forage Association

MANAGER'S MESSAGE

It's hard to believe that I have been at WCFA for almost three years now. When I first applied and accepted the job here, I had no idea the experiences, both opportunities and challenges that it would present to me! I can honestly say WCFA is an amazing organization and I feel privileged to be a part of it.

Another year has come and gone! And again it presented many challenges to farmers and ranchers in the West-central region. From the dry conditions in early spring, to the excess moisture in late summer, to the early snow fall in September. The challenges were numerous and, unfortunately, many crops still remain unharvested. On the forage side, this has led to significant variations in feed quality and many cereal crops being used as standing grazing options.
We had a change in staff with Jessica Watson leaving to move to the County of Two Hills and we were so fortunate to welcome back our past summer student Rachael Nay to the position of Conservation Agriculture and Extension Program Coordinator. Rachael grew up in the Seba Beach area and is passionate about the environment and animals. She has become such a valuable asset to our team and her dedication to the organization doesn't go unrecognized.

The majority of the plot work turned out well. On the research side, a few of the highlights included:

- Our Industrial Hemp and Cover Crop variety trials in Brazeau County
- For the first time, we included spring and winter cereal combinations varieties in our Regional Silage Trials to determine the most suitable varieties for the West-central region area. As well as to compare them to other common annuals including barley, oats and triticale. The results can be found in the Annual Seed Magazine for forage and quality results.
- Our Corn variety trail that included conventional and non-conventional varieties was also a favorite amongst producers in our region wanting to utilize corn in their operations.

We have brought expertise into the area through seminars, workshops, tours and field days. WCFA represented the local area as we relayed local production concerns to scientists from all over Western Canada and participated in provincial project initiatives.

WCFA was one of five associations involved in planning and launching a proposal to double the AOF funding from Alberta Agriculture & Forestry for all of Alberta's applied research and forage associations. The group continues to share our ideas of bringing more stable funding to all provincial organizations and to advocate the benefits of our great work that is supporting agricultural producers regionally and provincially.

The future looks very promising for WCFA as the Canadian Agricultural Partnership funding has launched. To date WCFA has submitted 4 proposals under the Adapting Innovative Solutions in Agriculture Program and 1 proposal under the Environmental Stewardship and Climate Change Group program.

Our producer co-operators deserve a lot of credit as well, for allowing us to carry out our projects at many locations. The Founding Board members should be applauded for their foresight and determination in getting things started. My appreciation is also extended to our current Board of Directors, particularly the Executive, who all work to make sure we're heading in the right direction.
Last but not least I want to thank the staff here at WCFA for all of your hard work and dedication to the organization. Your ability to adapt under pressure and keep a positive outlook is greatly appreciated.

Melissa Freeman
General Manager

Acknowledgements

Operation of West-Central Forage Association depends on support and cooperation from many groups and individuals.

We would like to take a moment to thank you for your support over the last year, and we look forward to working with/for you over the year to come. If there is anything that we can do to help you reach your agricultural goals, please don't hesitate to contact us.

WCFA would like to acknowledge the following, who have contributed to WCFA in a variety of ways by providing funding, donations, inputs or partnered on projects and/or extension events.

A& L Canada Laboratories
Agriculture Opportunity Fund
Agriculture and Agri-Food Canada
Alberta Agriculture and Forestry
Alberta Beef Producers
Alberta Environmental Farm Plan
Alberta Forage Industry Network (AFIN)
Alberta Seed Processors
Alternative Land Use Services (ALUS)
Applied Research & Extension Council (ARECA)
Bart Guyon
Battle River Research Group (BRRG)
Beef Cattle Research Council (BCRC)
Brazeau County
Bouius Custom
Canadian Cattle Identification Agency (CCIA)
Canadian Round Table for Sustainable Beef (CRSB)
CanaMaize
Chinook Applied Research Association (CARA)
Cows and Fish
Ducks Unlimited Canada
Farming Smarter (FS)
Foothills Forage and Grazing Association (FFGA)
Gateway Research Organization (GRO)
Grey Wooded Forage Association (GWFA)
Growing Forward 2/Canadian Agricultural Partnership
Har-De Agri Services
Lac Ste. Anne County
Lakeland Applied Research Association (LARA)
Land Stewardship Centre
Leduc County
Mercer Seeds Ltd.
Mackenzie Applied Research Association (MARA)
North Peace Applied Research Association (NPARA)
Northstar Seeds
Parkland County
Parkland Industrial Hemp Growers
Peace Country Beef & Forage Association (PCBFA)
Performance Seed
Pickseed
Smoky Applied Research & Demonstration Association (SARDA)
TerraMax
Thunder Seed Canada
Union Forage
University of Alberta Breton Plots
Yellowhead County
Woodlands County

2018 BOARD EXECUTIVE

President: Grant Chittick
Vice-President: Brian Dickson
Treasurer: Greg Malyk
Secretary: Dale Engstrom

2018 DIRECTORS

Director: Bruce Churchill
Director: Larry Kidd
Director: Therese Tompkins
Director: Frank Maddock
Director: Rod Nikkel
Director: Brett Byers
Director: Shayne Horn

Contact the board: board@westcentralforage.com

2018 STAFF

GENERAL MANAGER
Melissa Freeman, BBA
manager@westcentralforage.com

CONSERVATION AG & EXTENSION PROGRAM COORDINATOR
Rachael Nay, BSc. Ag
conservationag@westcentralforage.com

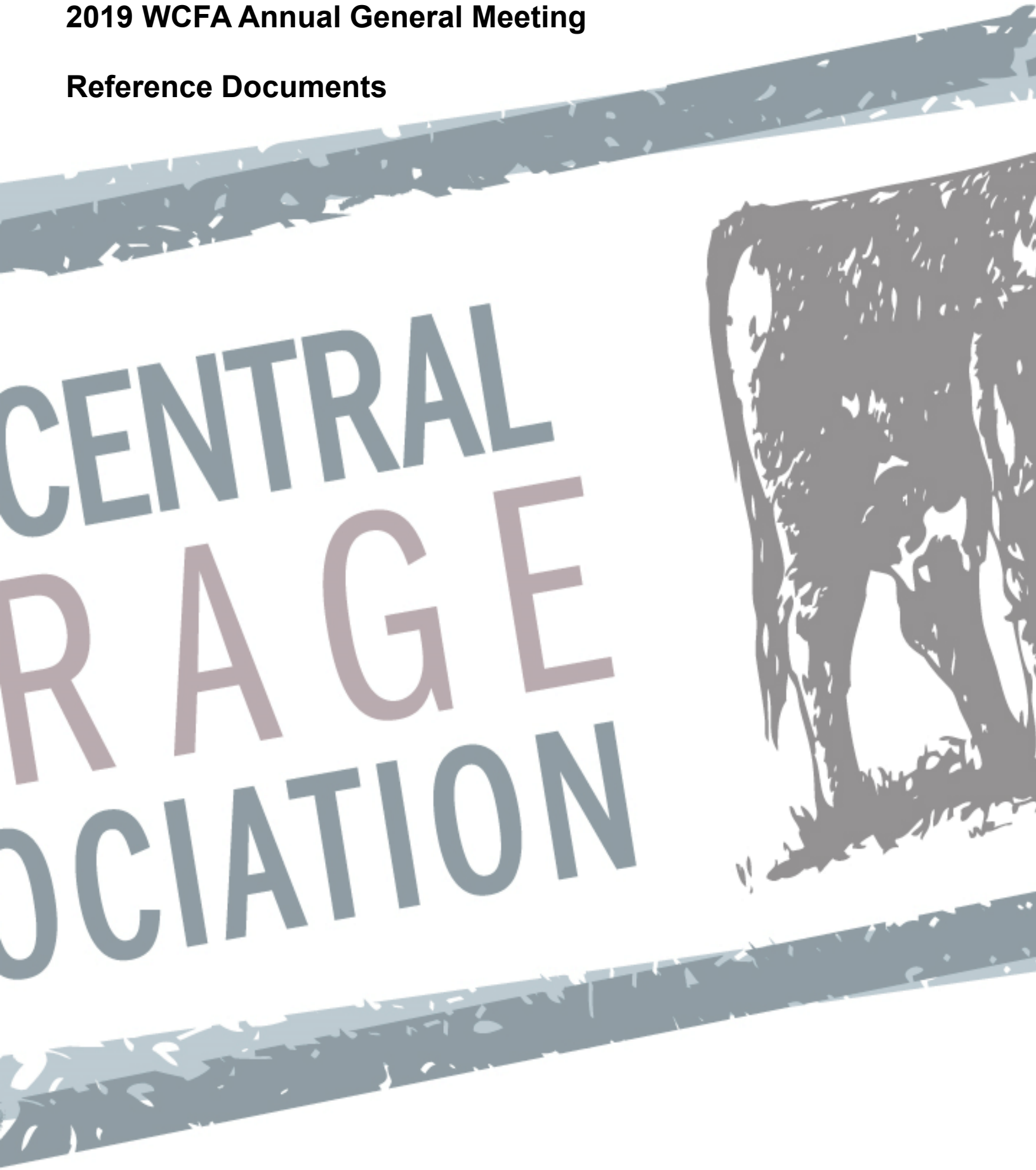
FORAGE & LIVESTOCK PROGRAM MANAGER
Fito Zamudio Baca, BSc., P. Ag
forage@westcentralforage.com

2018 SUMMER STAFF

Dylan Fath
Garyn Topola

2019 WCFA Annual General Meeting

Reference Documents



West-Central Forage Association

MINUTES

Annual General Meeting
March 15, 2018
Evansburg Royal Canadian Legion
Evansburg, Alberta

Meeting called to order by Grant Tailleu at 6:44pm

Motion 2018.03.15-AGM-M01
Motion that members present constitutes a quorum.
Frank Kredding /Ted Commander **Carried**

Roll Call – Introduction of Board and Staff (see Appendix 1.)

Adoption of the Agenda

Motion 2018.03.15-AGM-M02
Motion to adopt the agenda as presented.
Bob Kidd/ George Zinykl **Carried**

Minutes from the 2017 AGM

Motion 2018.03.15-AGM-M03
Motion to adopt the minutes as presented.
Bob Kidd/Rod Hay **Carried**

Reports

Treasurer's Report

Financial Statements presented by Trevor Dodd CPA, CA of Hawkings Epp Dumont.

Motion 2018.03.15-AGM-M04
Motion to accept the financial statements as presented.
Dale Kaliel/ Denver Hoff **Carried**

2017/18 Budget – Dale Engstrom, Treasurer

2018/2019 Budget presented by Treasurer Dale Engstrom.

Motion 2018.03.15-AGM-05
Motion to adopt the budget as presented.
Dale Kaliel/ Therese Tompkins **Carried**

Appointment of the Auditor

Motion 2018.03.15-AGM-06
Motion to re-appoint Hawkings Epp Dumont as the auditor for 2017/18.
Bob Kidd/ Frank Kreddig **Carried**

Election of Directors
Call for nominations:

Grant Tailleau, Stacey Meunier, and Eric Vanderwell terms have expired
Directors were thanked for their service to the Association.

Rod Nickel nominated by Rod Hay
Bruce Churchill nominated by Bob Kidd
Therese Tompkins nominated by Kris Cammandeur

Motion 2017.03.29-AGM-07
Motion that nominations cease.
Frank Kreddig/Chad Meaunier **Carried**

Board elected by acclamation

Election Results
Linda Hunt of Alberta Agriculture and Forestry and Joseph of Farm Credit Canada where prepared to act as scrutineers.

The three nominated directors were Brian Dickson, Shayne Horn & Grant Chittick who were elected by secret ballot

Adjournment

Motion 2018.03.15-AGM-08
Motion to adjourn the meeting.
Bob Kidd **Carried**

Meeting adjourned at 7:26 PM

_____
Grant Taillieu, President

_____
Melissa Freeman, Recorder

Appendix 1. Roll Call

Board of Directors

Grant Tailleau – President
Grant Chittick – Vice President
Dale Engstrom – Treasurer
Stacey Meunier – Secretary
Eric Vanderwell
Greg Malyk
Larry Kidd
Frank Maddock
Brian Dickson
Shayne Horn

Staff

Melissa Freeman
Fito Zamudio
Jessica Watson
Tammy Zinyk

Members

Aren Skogstad
Falon Dickson
Bruce Churchill
Shayne Horn
Denver Hoff
Frank Kreddig
Lynette Kreddig
Linda Engstrom
John Mochniuk
Stan Rusin
Kris Commandeur
Ted Commandeur
Mark Cardinal
Daryl Deleeuw
George Zinyk
Therese Tompkins
Brenda Maddock
Ken Sarin
James Birkenhagen
Bob Kidd
Yvonne Churchill
Dale Kaliel
Chad Meunier
Rod Nikkel
Rod Hay
Anton Knoll
Amber Kenyon
John Cross

Guests

Linda Hunt, Alberta Ag & Forestry
Jennifer Benson – Yellowhead County
Stacy Berry – Lac Ste Anne County
Joseph Fedyniak - AFSC
Janice O'Reilley – Organic Producers Association
Clint Erickson – Green Bos Farm
Ols Tubs – Calvin Grabler
John Knapp
Kelly Vandenburg

WEST CENTRAL FORAGE ASSOCIATION

Financial Statements

For The Year Ended November 30, 2018

MANAGEMENT'S RESPONSIBILITY FOR FINANCIAL REPORTING

Management of West Central Forage Association is responsible for the integrity of the accompanying financial statements. The financial statements have been prepared in accordance with Canadian accounting standards for not-for-profit organizations.

To assist in meeting its responsibility, management maintains appropriate systems of internal and administrative controls designed to provide reasonable assurance that transactions are appropriately authorized and accurately recorded, that assets are properly accounted for and safeguarded, and that financial information produced is relevant and reliable.

The preparation of the financial statements necessarily includes some amounts which are based on the best estimates and judgments of management.

Prior to their submission to the Members, the financial statements have been reviewed and recommended for approval by the Board of Directors. The financial statements have been audited by the independent firm of Metrix Group LLP, Chartered Professional Accountants. Their report to the Members, stating the scope of their examination and opinion on the financial statements follows.

Grant Chittick, President

Greg Malyk, Treasurer

Evansburg, Alberta
March 19, 2019

METRIX GROUP LLP
CHARTERED PROFESSIONAL ACCOUNTANTS

INDEPENDENT AUDITORS' REPORT

To the Members of West Central Forage Association

Opinion

We have audited the financial statements of West Central Forage Association (the Association), which comprise the statement of financial position as at November 30, 2018, and the statements of revenues and expenditures, changes in net assets and cash flows for the year then ended, and notes to the financial statements, including a summary of significant accounting policies.

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of the Association as at November 30, 2018, and the results of its operations and its cash flows for the year then ended in accordance with Canadian accounting standards for not-for-profit organizations.

Basis for Opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the *Auditors' Responsibilities for the Audit of the Financial Statements* section of our report. We are independent of the Association in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada, and we have fulfilled our other ethical responsibilities in accordance with those requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Responsibilities of Management and Those Charged with Governance for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with Canadian accounting standards for not-for-profit organizations, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Association's ability to continue as a going concern, disclosing, as applicable, matters relating to going concern and using the going concern basis of accounting unless management either intends to liquidate the Association or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Association's financial reporting process.

(continues)

Auditors' Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion. Reasonable assurance is a high level of assurance, but it is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Association's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Association's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditors' report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditors' report. However, future events or conditions may cause the Association to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

METRIX GROUP LLP

Chartered Professional Accountants

Edmonton, Alberta
March 19, 2019

WEST CENTRAL FORAGE ASSOCIATION
Statement of Financial Position
As at November 30, 2018

	2018	2017
ASSETS		
CURRENT		
Cash and cash equivalents	$ 62,052	$ 79,709
Accounts receivable	80,860	70,491
Goods and Services Tax	3,955	4,961
Interest receivable	-	93
Inventory	1,085	1,085
Prepaid expenses	1,726	387
	149,678	156,726
TANGIBLE CAPITAL ASSETS *(Note 3)*	30,014	49,693
	$ 179,692	$ 206,419
LIABILITIES		
CURRENT		
Accounts payable and accrued liabilities	$ 13,396	$ 12,494
Wages payable	12,478	14,204
Employee deductions payable	4,150	-
Deferred revenue *(Note 4)*	38,325	65,258
	68,349	91,956
NET ASSETS		
Unrestricted	111,343	114,463
	$ 179,692	$ 206,419

ON BEHALF OF THE BOARD:

_____ *Director*

_____ *Director*

The accompanying notes are an integral part of these financial statements.

WEST CENTRAL FORAGE ASSOCIATION
Statement of Revenues and Expenditures
For The Year Ended November 30, 2018

	2018	2017
REVENUE		
Grants *(Schedule 1)*	$ 319,559	$ 440,505
Weevils and flies sales	107,110	90,151
Member services	45,832	7,394
Other	5,756	7,767
Donations and sponsorships	1,700	6,787
	479,957	552,604
EXPENSES		
Salaries, wages and benefits	248,671	255,453
Weevils and flies	63,875	69,586
Extension	40,343	19,511
Occupancy	31,777	35,312
Plot and demonstration	18,018	30,447
Office and general	15,631	30,706
Staff development	8,235	13,492
Telephone	7,864	6,888
Travel	7,407	19,197
Accounting fees	5,685	11,917
Insurance	4,713	6,590
Professional fees	4,661	4,769
Interest and bank charges	1,936	1,819
Member services	979	437
Vehicle	-	1,271
	459,795	507,395
EXCESS OF REVENUE OVER EXPENSES FROM OPERATIONS	20,162	45,209
OTHER EXPENSES		
Amortization	23,282	22,217
EXCESS (DEFICIENCY) OF REVENUE OVER EXPENSES	$ (3,120)	$ 22,992

The accompanying notes are an integral part of these financial statements.

WEST CENTRAL FORAGE ASSOCIATION
Statement of Changes in Net Assets
For The Year Ended November 30, 2018

	2018	2017
NET ASSETS - BEGINNING OF YEAR	**$ 114,463**	$ 91,471
DEFICIENCY OF REVENUE OVER EXPENSES	**(3,120)**	22,992
NET ASSETS - END OF YEAR	**$ 111,343**	$ 114,463

The accompanying notes are an integral part of these financial statements.

WEST CENTRAL FORAGE ASSOCIATION
Statement of Cash Flows
For The Year Ended November 30, 2018

	2018	2017
OPERATING ACTIVITIES		
Excess (deficiency) of revenue over expenses	**$ (3,120)**	$ 22,992
Item not affecting cash:		
Amortization	**23,282**	22,217
	20,162	45,209
Changes in non-cash working capital:		
Accounts receivable	**(10,369)**	(19,479)
Goods and Services Tax	**1,006**	(2,375)
Interest receivable	**93**	27
Prepaid expenses	**(1,339)**	2,868
Accounts payable and accrued liabilities	**903**	5,813
Wages payable	**(1,726)**	11,618
Employee deductions payable	**4,150**	-
Deferred revenue	**(26,933)**	(169,705)
	(34,215)	(171,233)
	(14,053)	(126,024)
INVESTING ACTIVITY		
Purchase of tangible capital assets	**(3,604)**	(37,568)
DECREASE IN CASH FLOW	**(17,657)**	(163,592)
Cash and cash equivalents - beginning of year	**79,709**	243,301
CASH AND CASH EQUIVALENTS - END OF YEAR	**$ 62,052**	$ 79,709

The accompanying notes are an integral part of these financial statements.

The objective of the Association is to serve the needs of forage and livestock producers in the west central area and across the province by conducting extension activities, applied research and agricultural demonstrations.

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Basis of presentation

The financial statements were prepared in accordance with Canadian accounting standards for not-for-profit organizations (ASNPO).

Measurement uncertainty

The preparation of financial statements in conformity with Canadian accounting standards for not-for-profit organizations requires management to make estimates and assumptions that affect the reported amount of assets and liabilities, disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the period. Such estimates are periodically reviewed and any adjustments necessary are reported in earnings in the period in which they become known. Actual results could differ from these estimates.

Financial instruments

Financial instruments are recorded at fair value when acquired or issued. In subsequent periods, financial assets with actively traded markets are reported at fair value, with any unrealized gains and losses reported in income. All other financial instruments are reported at amortized cost, and tested for impairment at each reporting date. Transaction costs on the acquisition, sale, or issue of financial instruments are expensed when incurred.

Financial assets measured at amortized cost include cash and cash equivalents and accounts receivable.

Financial liabilities measured at amortized cost include accounts payable and accrued liabilities.

When there is an indication of impairment and such an impairment is determined to have occurred, the carrying amount of financial assets measured at fair value or amortized cost is reduced to the greater of the discounted future cash flows expected or the proceeds that could be realized from sale of the financial asset. Such impairments can be subsequently reversed if the value subsequently improves.

Cash and cash equivalents

Cash and cash equivalents are comprised of items that are readily convertible to known amounts of cash, are subject to an insignificant risk of change in value, and have a maturity of one year or less at acquisition. Cash and cash equivalents consists of cash on hand and balances with the bank net of outstanding cheques.

Inventory

Inventory is valued at the lower of cost and net realizable value with the cost being determined on a first-in, first-out basis. Net realizable value is defined as estimated selling price less estimated selling costs.

(continues)

1. **SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES** *(continued)*

Tangible capital assets

Tangible capital assets are stated at cost or deemed cost less accumulated amortization and are amortized over their estimated useful lives on a straight-line basis at the following rates and methods:

Equipment	20%
Furniture and fixtures	20%
Motor vehicles	30%
Computer equipment	55%

In the year of acquisition, half rates are applied.

Revenue recognition

West Central Forage Association follows the deferral method of accounting for contributions.

a) Restricted contributions are recognized as revenue in the year in which the related expenditures are incurred.

b) Unrestricted contributions are recognized when received or receivable if the amounts to be received can be reasonably estimated and collection is reasonably assured.

c) Revenue from sales of products is recognized when title passes to the customer, which generally coincides with the delivery and acceptance of goods.

d) Revenue from memberships is recognized on the first day of the year to which they relate, or on the day received during the applicable year.

Donated services and materials

The operations of the Association depend on both the contribution of time by volunteers and donated materials from various sources. The fair value of donated materials and services cannot be reasonably determined and are therefore not reflected in these financial statements.

2. **FINANCIAL INSTRUMENTS**

The Association is exposed to various risks through its financial instruments. The following analysis provides information about the Association's risk exposure and concentration as of November 30, 2018.

(a) Credit risk

Credit risk arises from the potential that a counter party will fail to perform its obligations. The Association is exposed to credit risk from customers. An allowance for doubtful accounts is established based upon factors surrounding the credit risk of specific accounts.

(b) Liquidity risk

Liquidity risk is the risk that an entity will encounter difficulty in meeting obligations associated with financial liabilities. The Association is exposed to this risk mainly in respect of its receipt of funds from its customers and other related sources and accounts payable.

3. TANGIBLE CAPITAL ASSETS

	Cost	Accumulated amortization	**2018 Net book value**	2017 Net book value
Equipment	$ 91,320	$ 77,182	**$ 14,138**	$ 25,970
Furniture and fixtures	7,121	7,121	**-**	50
Motor vehicles	23,962	10,783	**13,179**	20,368
Computer equipment	12,095	9,398	**2,697**	3,305
	$ 134,498	$ 104,484	**$ 30,014**	$ 49,693

4. DEFERRED REVENUE

	2017	Additions	Used	2018
Agriculture Opportunity Fund	$ 37,537	$ 175,000	$ 212,537	$ -
Stewardship Alliance for Conservation Agriculture	10,407	43,000	45,907	7,500
Other	6,103	-	6,103	-
Lac Ste. Anne County	6,000	6,000	12,000	-
Stem gall flies	4,941	93,284	82,700	15,525
Memberships	270	2,893	2,863	300
Crop trials	-	31,575	16,575	15,000
	$ 65,258	$ 351,752	$ 378,685	$ 38,325

WEST CENTRAL FORAGE ASSOCIATION

Grants *(Schedule 1)*

For The Year Ended November 30, 2018

	2018	2017
Agricultural Opportunity Fund	$ 212,537	$ 306,467
Stewardship Alliance for Conservation Agriculture - Matched Funds	45,906	59,172
Brazeau County	15,000	15,150
Lac Ste. Anne County	12,000	-
Other	10,910	11,181
Human Resources Development Canada Student Funding	9,706	8,784
Yellowhead County	8,000	-
Parkland County	4,000	4,000
Leduc County	1,500	1,000
Ducks Unlimited Canada	-	18,251
Woodlands County	-	16,500
	$ 319,559	$ 440,505

The accompanying notes are an integral part of these financial statements.

WCFA OPERATING BUDGET	Budget	
Revenue	**2019**	
Government Grants:		
AOF AG	$	100,000.00
AOF Environmental	$	75,000.00
AOF Supplemental		
SACA	$	33,000.00
HRDC Student funding	$	29,118.00
SACA matching	$	13,140.00
Counties	$	45,000.00
	$	**295,258.00**
General Revenue		
Sales/Advertising	$	700.00
Corporate Sponsorship	$	6,000.00
AGM	$	3,000.00
Fee for Service	$	600.00
Hay/Silage/Soil Testing	$	2,500.00
Interest	$	400.00
Weevil/Fly Interest/SC	$	500.00
Memberships	$	4,500.00
Newsletter Advertising	$	1,000.00
Building Rent	$	3,200.00
Equipment Rent	$	1,000.00
Stem Flies	$	55,000.00
Weevils	$	50,000.00
Weevil/flies transfer	$	15,000.00
Project bank revenue	$	300.00
Land Stewardship Centre	$	20,000.00
ALES (Ag Intern)	$	4,000.00
other (reallocation)		
Hemp testing	$	1,500.00
Corn (WCFA)	$	7,000.00
Cover Crops (WCFA)	$	7,000.00
Soil Health (CARA)	$	5,000.00
Perennials (CAP)	$	16,000.00
Cover Crops (PCBF)	$	15 000.00
Regional Silage Trials (CAP)	$	21,000.00
Inter Row Cropping (CAP)	$	47,820.00
Gentics (CAP)	$	66 000.00
Xarvio	$	3,500.00
Workshop Registrations	$	15,000.00
Revenue Total	**$**	**586,778.00**

Expense	Budget 2019
Core Function Expenses	
Manpower	
Full-Time Staff (Manager & Staff)	$ 303,582.61
Contractors	$ 1,000.00
Employee Benefits	$ 15,000.00
Professional Designation	$ 650.00
Forage Grazing Conf	$ 3,000.00
Soil & Grazing Conference	$ 1,000.00
Staff Reg. /Ext.	$ 5,000.00
Staff Training	$ 3,000.00
Staff Meals/Accommodations	$ 2,500.00
Personal Reimburse/Vehicle	$ 1,000.00
WCFA Vehicle Expense	$ 4,000.00
Manpower total	**$ 339,732.61**
Office Expenses	
Advertising	$ 1,000.00
Christmas Expense	$ 700.00
AGM Expense	$ 3,000.00
Audit/Accounting Fees	$ 5,000.00
Bookkeeping Expense	$ 2,000.00
Building Maintenance & Repairs	$ 1,000.00
Computer Maintenance	$ 3,500.00
Dues & Memberships	$ 1,600.00
Furniture & Equipment	$ 500.00
Insurance	$ 7,500.00
Interest & Bank Charges	$ 1,500.00
Office Supplies	$ 3,500.00
Permits	
Postage & Freight	$ 3,500.00
Printing & Copying	$ 5,000.00
Extension materials	$ 400.00
Rent	$ 24,600.00
Resources	$ 200.00
Property Tax	$ 3,200.00
Utilities	$ 6,500.00
Telephone/ Internet	$ 8,000.00
Member Services	
Bad Debt/over/short	$ 100.00
Volunteer Recog/Gifts & Donations	$ 500.00
Member Services	$ 400.00
Equipment Rental	$ 100.00
Weevil/Fly Expense	$ 800.00
Weevils	$ 42,500.00
Stem Gall Fly	$ 38,000.00
Weevil Interest Bank Charges	
Total Office Expenses	**$ 164,600.00**

Board Expenses	
Meetings/Travel	$ 500.00
Training	$ 500.00
Total Board Expenses	**$ 1,000.00**
Total Administrative Expenses	**$ 165,600.00**
Project Expenses	
CAP Project	
Inter row cropping	$ 15,000.00
Gentics	$ 15 000.00
High Legume	$ 5,000.00
Plots Expenses	
Hauling & Custom Work	$ 1,500.00
Equipment rep & maint	$ 3,000.00
Soil/Feed/Water Testing	$ 7,000.00
Tools & Supplies	$ 2,500.00
Fuel	$ 700.00
Total Plots Expenses	**$ 14,700.00**
Extension Expenses	
Consultant/Professional Fees	$ 8,000.00
Extension materials	$ 400.00
Registration	$ 400.00
Facilities	$ 5,000.00
Newsletters	$ 3,000.00
Meals	$ 10,000.00
Travel	$ 2,500.00
Website	$ 500.00
Total Extension Expenses	**$ 29,800.00**
Total Plots & Extension	**$ 44,500.00**
Total Expenses	**$ 549,832.61**

EXTENSION 2019


Curt Pate Stockmanship School

Sheep & Goat Symposium


Progressing Your Operation


Take This Farm and Love It!


Ladies Ranching Retreat

Lake Health Day


Feed What You Need Workshop


Progressing Your Operation

JANUARY

Take This Farm and Love It! (January 12-13, 2018)

Held at the Ramada Stony Plain Hotel, in partnership with GRO. Joel Salatin and Steven Kenyon discussed topics to take your farm business to the next level and make it sustainable for generations to come in this 2 day Stockman Grassfarmer Business School. 60 attendees.

FEBRUARY

Ladies Ranching Retreat (February 2, 2018)

Held at the Parkland Village Community Centre in partnership with Parkland County. Dr. Claire Ainsworth discussed calving techniques and herd health and Courtney O'Keefe talked about mineral and vitamin supplementation for your herd. Aly Price and Montana Laye discussed health and wellness for us and Kathy Larson covered the cost of production and costs of replacements for herds. Leona Dargis was the Keynote speaker, who shared how to take unimaginable change, adapt to it and succeed in her presentation "Life is What You Make It". 90 attendees.

Lunch & Learn: Antimicrobials & Upcoming Changes (February 6, 2018)

Held at the Peers Multiplex, in partnership with Yellowhead County. Dr. Keith Lehman discussed antibiotic resistance and the changes that affect the way in which livestock producers are able to access and administer antibiotics. Tim Nikkel with Boehringer Ingelheim discussed parasite control. 46 attendees.

Curt Pate Stockmanship (February 10, 2018)

Held at the Thorsby Haymaker Center, in partnership with Leduc County and Thorsby Stockyards. Melissa Downing of Verified Beef Production Plus discussed the VBP+ program. Curt Pate delivered classroom instruction on livestock handling techniques and a live demonstration. 42 attendees.

MARCH

High Legume Pasture Seminar (March 8, 2018)

Held at the Fort Assiniboine Legion Hall, in partnership with GRO and Growing Forward 2. There was a regional cooperators discussion panel. Grant Lastiwka of Alberta Ag & Forestry, Dr. Surya Acharya, and Graeme Finn discussed the project findings, establishment management tips and challenges and sainfoin varieties. 14 attendees.

Annual General Meeting (March 15, 2018)

Held at the Evansburg Legion Hall with a number of producers and industry representatives present.

Environmental Farm Plan Workshops (March 27, May 24, October 29, November 22, 2018)

Workshops were delivered at the Fort Assiniboine County Office and Lac Ste. Anne County Office to encourage producers to develop and complete their EFP's with assistance from EFP technicians.

APRIL

Classroom Agriculture Presentations (April 12, 13, 19, 26 and 27, 2018)

Presentations were delivered at the Evansburg, Wildwood and 3 Drayton Valley schools to Gr. 4/5's. Students were introduced to various aspects of agriculture and the roles of West-Central Forage in the industry.

JUNE

Pond Days (June 1, 5, and 12, 2018)

3 Pond Days were hosted in partnership with Yellowhead, Woodlands and Parkland Counties. Days were hosted at various lakes throughout the area for Gr. 4/5 students to learn about riparian health, soil, and other lake and environmental topics.

AUGUST

Progressing Your Operation: WCFA Plot and Local Producer Crop Tour (August 9, 2017)

Held in partnership with Brazeau County and Yellowhead County. Stops included: WCFA's Brazeau County Research Site, WCFA's Yellowhead County Research Site, Hoff Ranches, and Peter Bahrynowski's operation. Presenters included Dr. Bart Lardner, Karin Lindquist, Brian Palichuk, Elston Solberg, Therese Tompkins, Courtney O'Keefe and Byron James. 48 attendees.

Lake Health Day (August 15, 2018)

Held at the Shiningbank Lake Day Use area, in partnership with Yellowhead County. Shiningbank Lake community members and lake users were given the opportunity to learn from SACA, Cows & Fish, Alberta Lake Management Society, Alberta Fish and Wildlife, and Alberta Invasive Species Council about various lake health issues and management techniques. 30 attendees.

NOVEMBER

Sheep and Goat Symposium (November 15, 2018)

Held at the Wildwood Community Hall, in partnership with Yellowhead County. Kristen Ritson-Bennett discussed flock nutrition and demonstrated SheepBytes, Shannon Rizicka talked about direct marketing, and Louise Liebenberg discussed predator control options. Dr. Kathy Parker presented on genetics and selecting replacements and Dr. Lynn Tait discussed flock health management and the new drug regulations now in place for producers. 60 attendees.

Feed What You Need Workshop (November 30, 2018)

Held at the Mayerthorpe Royal Canadian Legion Hall, in partnership with Lac Ste. Anne County and the Alberta Beef, Forage & Grazing Centre. Jaime McAllister discussed the importance of feed testing and implications of feeding salvage crops and Fito Zamudio Baca demonstrated an online feed test analyzer calculator tool. Grant Lastiwka presented on bale grazing myths and facts which was followed by a tour of local producer Tom Thompson's bale grazing operation. 28 attendees.

STEWARDSHIP ALLIANCE FOR CONSERVATION AGRICULTURE

SACA

Stewardship Alliance for Conservation Agriculture

CANADA THISTLE BIOLOGICAL CONTROL AGENTS

STEM-GALL FLIES

463 releases were ordered through WCFA in the fall of 2017 for (approximate) mid June delivery. Due to the large number of releases required, 2 trips were made to facilitate the distribution of the flies. The first delivery was made on June 28th and 29th, with the second delivery happening the following week on July 5th and 6th. The flies are overwintered in a greenhouse setting that makes harvesting them less challenging, which means that our supplier was able to fulfill all of the orders placed.

Feedback from those who have released the flies so far has been positive overall. Many of those that have released the flies were able to find galls forming on the thistle plants in the areas where they were placed by the end of the growing season. We were able to check our release sites in the fall of this year after the killing frost to look for evidence of gall formation. A number of our sites were compromised as they were heavily disturbed by livestock activity or mowing and we were unable to find gall fly activity in the others. We will be making additional releases into these sites in the spring of 2019 and will keep monitoring to determine their establishment and efficacy. WCFA will be bringing the gall-flies in again in 2019.

Stem-Mining Weevils

313 releases were ordered through WCFA in the spring of 2018 for (approximate) end of August delivery. Our supplier's collection season experienced some set backs (Smoke, cold weather, etc.) that resulted in a later collection date for our pick-up of the weevils. Unfortunately, we were unable to deliver all of the releases we required due to unseasonably cold weather and snow, which coincided with this collection date. We were however able to successfully deliver 104 trays on September 21st to those who ordered trays in all portions of the province South of and including Red Deer.

Although the weather did put a damper on this years delivery, we are proud of the progress we have made so far in continuing to deliver a large number of releases throughout the province in recent years (50 releases in 2016, 219 releases in 2017). The demand for the stem-mining weevils has increased significantly over the last few years, which has put strain on our suppliers. WCFA will once again be bringing in the weevils in 2019 and will continue to work with our multiple suppliers to ensure continued weevil delivery, while remaining cost-effective. We thank those who have participated in our biological control agent program for their support!

Shiningbank Lake Community Stewardship Initiative

The Shiningbank Lake Community Stewardship Initiative launched in 2017. The Stewardship Alliance for Conservation Agriculture (SACA), a partnership between WCFA, Yellowhead County, and Woodlands County, assumed the lead role in the planning and implementing of the project. This initiative aims to bring awareness to producers, community members, and lake users on the importance of riparian health, biodiversity, wildlife habitat, water quality, and how they can all work to maintain or improve these features. This project also collected data in order to benchmark the current state of the health of the lake, in terms of water quality and riparian health, and to inform decisions on the types of management activities that will best improve the health of the lake.

In early 2017, SACA secured funding through the Land Stewardship Centre's Watershed Stewardship Grant program to begin work on the project. This funding was in effect until September 1, 20118 and allowed us to launch the initiative and complete our data collection.

In the summer of 2017, two baseline riparian health assessments were conducted on county owned property directly on the lake. One site's reach overall rated as Healthy (proper functioning condition) based on the Cows and Fish Lentic Wetland Assessment scoring system. The second site's reach scored as Unhealthy (non-functional) due to the high amount of disturbance in the area based on the Cows and Fish Lentic Wetland scoring system. In August of 2018, SACA worked with Cows and Fish to complete two more detailed assessments on a local producer's property on the lake. The reports for these assessments are still in development from Cows and Fish and should be received in the spring of 2019.

In 2017, two water sampling trips were conducted in the summer and early fall to begin assessing the water quality of the lake, looking at a number of parameters. Two additional water sampling test trips were conducted in the summer of 2018, assessing the same parameters. SACA is working with the Alberta Lake Management Society (ALMS) to provide a report on the findings of these benchmark water quality data collections.

On August 15th, 2018 SACA, along with Yellowhead County, hosted a Lake Health Day at the day use area on Shiningbank Lake. This extension event gave community members and lake users the chance to stop by for a free hotdog lunch and talk with organizations such as Cows and Fish, ALMS, Alberta Fish and Wildlife, etc. to discuss any questions or concerns they may have about lake health issues.
SACA has secured funding from the Land Stewardship Centre's Watershed Stewardship Grant program for 2019 to continue this initiative in the form of knowledge transfer activities and we look forward to expanding our engagement with the Shiningbank Lake community.

FORAGE TRIALS

Evaluation of Corn Varieties in the West Central Alberta Area

Partners

Green Bos Farms
CanaMaize Seed Inc.
Northstar Seed
Pickseed Canada
Yellowhead County
Performance Ag Group Evansburg
Bouius Custom Work

Summary

In 2018, 8 varieties of corn were evaluated for forage dry matter, yield and feed quality value in Wildwood, Alberta. Corn Heat Units (CHU) for these hybrid varieties range from 1950 to 2700. Four of those eight varieties are conventional "non-genetically modified", the rest are Roundup Ready™ "genetically modified". (Table 1)

Objective

To evaluate eight corn varieties for quality, yield biomass on dry matter basis and maturity.

Treatments

Company	*Variety*	*CHU*
DLS Pickseed ™	2320 RR	2300
Northstar Seed Ltd.	LR 9573	2200
Northstar Seed Ltd.	LR 9473	2150
Northstar Seed Ltd.	LR 9972*	2150
Green Bos Farms	GS Leafy silage*	2200 - 2700
CanaMaize™ Seed Inc.	CM 440 *	1950
CanaMaize™ Seed Inc.	CM 16N20*	2100

Methodology

Demonstration plots were planted at the West-Central Forage Association (WCFA) Forage Research Site (SE-27-53-09-W5), near Wildwood, Alberta in the gray wooded soil zone. Plots were seeded in a prepared seedbed on May 23, with a John Deere corn planter (20 m long, 12 rows at 30 inch spacing) at a rate of 30,000 seeds per acre and 62,000 seeds per acre for CanaMaize CM440 variety.
Glyphosate treatments were administered prior to seeding and to Roundup Ready™ varieties, as well as again when the crop was at the three leaf stage. For conventional varieties 2,4D Ester 700 treatments were administered.
Due to the environmental conditions (temperatures below average and excess moisture) corn plants were stunted and weed pressure extreme. On August 1st, all varieties were treated with Alpine G22 plus AAntrex Liquid 480 at 1.25 L/acre mix.
Once established, rows where trimmed 20 m for uniformity. At harvest, plant and cob population counts were conducted along 17.5 m length of 2 rows per treatment (A & B). Above ground plant matter was harvested, weighed and subsampled to determine moisture content, dry matter and feed quality.
Environmental conditions were collected from the (Alberta Agriculture) weather station in Evansburg AB and used to determine Corn Heat Units (CHU). CHU's are calculated using maximum and minimum growing season temperatures, and precipitation levels. See Graphs 6, 7 and 8.

Results

Plant count: Plant counts, cob maturity summaries and moisture percentages for each treatment are shown in Table 2.

Due to frost, corn was harvested before it was mature

Assessment of cob maturity:

(R2 Stage: Blister). R2 kernels are white on the outside and resemble a blister. The endosperm and its now-abundant inner fluid are clear. The embryo is still developing, but it now contains a developing miniature corn plant. Much of the kernel has grown out from the surrounding cob materials. The cob is close to full size. Silks are darkening and beginning to dry out. Kernels are beginning to accumulate dry matter. Seed-fill is beginning.(R3 Stage: Milk) The R3 kernel is yellow outside, while the inner fluid is now milky white due to accumulating starch. The embryo is growing rapidly. Most of the R3 kernel has grown out from the surrounding cob. Silks are brown and dry or becoming dry. (DuPont Pioneer™, Reproductive Growth Stages. Management Guide.)

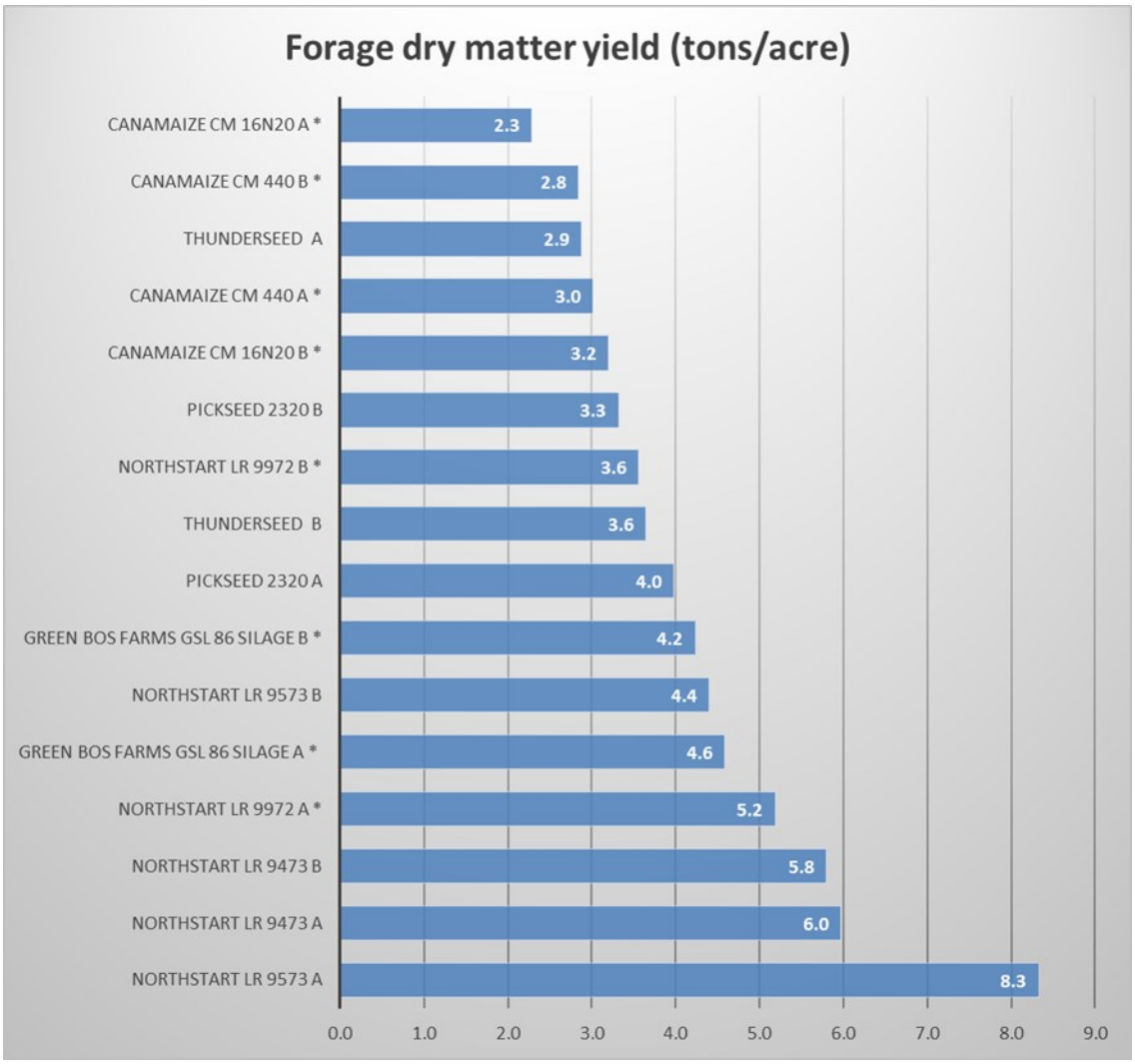
Variety	# Plants	R2-cobs	R3-cobs	Total cobs	Moisture %
Thunder Seed A	34	30	0	30	76.47
Thunder Seed B	31	26	4	30	76.47
Pickseed 2320 A	26	30	0	30	75.86
Pickseed 2320 B	39	38	0	38	75.86
Northstar LR 9573 A	37	53	2	55	76.52
Northstar LR 9573 B	36	47	2	49	76.52
Northstar LR 9473 A	38	43	0	43	64.22
Northstar LR 9473 B	36	39	0	39	64.22
Northstar LR 9972 A *	35	60	0	60	75.00
Northstar LR 9972 B *	32	29	0	29	75.00
CanaMaize CM 440 A *	46	57	8	65	65.57
CanaMaize CM 440 B *	58	51	21	72	65.57
Green Bos Farms GS Leafy silage A *	33	36	0	36	64.71
Green Bos Farms GS Leafy silage B *	24	29	0	29	64.71
CanaMaize CM 16N20 A *	26	23	0	23	73.85
CanaMaize CM 16N20 B *	32	31	0	31	73.85

Table 2. – Plant counts were conducted along 17.5ft in length (1/10,000 of an acre), 2 samples per treatment (A & B).
*Conventional varieties

Forage dry matter yield:

Two samples were taken from each variety to determine yield biomass on a dry matter basis.

The highest yielding treatment was Northstar LR 9573-A with 8.3 tons per acre, followed by Northstart LR 9473-A with 5.9 tons, followed by Northstar LR 9473-B with 5.1 tons. Yield results are illustrated in Graphic 1 below.



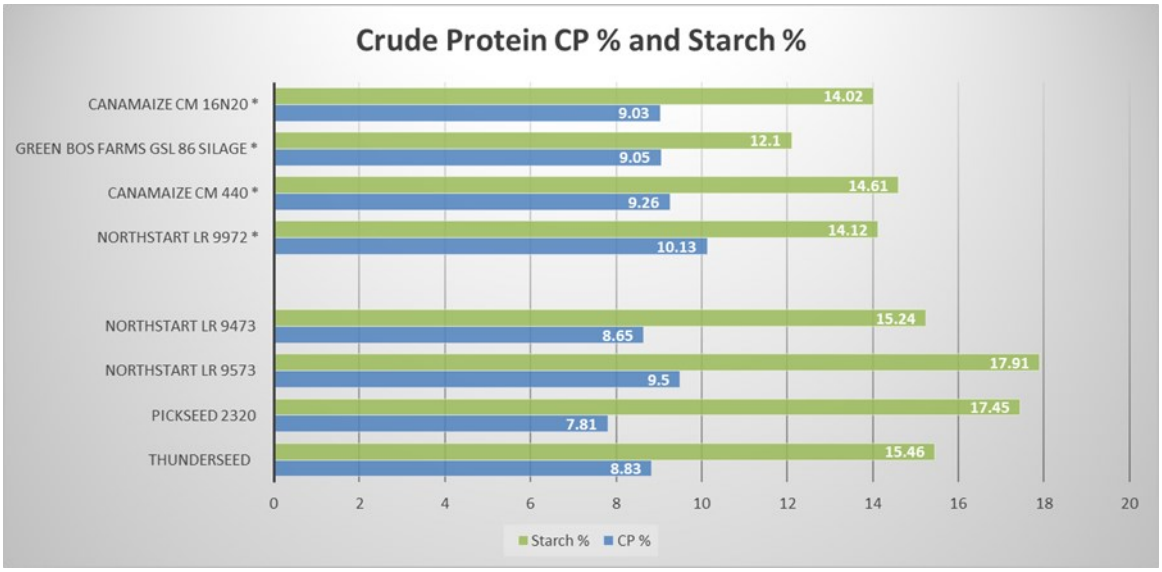
*Graphic 1. – 2018 Corn Variety Trial, Dry Matter (Tons/ac) for corn grown in Wildwood Alberta. *Conventional varieties*

Feed quality:

Starch. - Starch is an important nutrient in animal feed, a primary source of energy and it improves production. The most common energy source is from the carbohydrates contained in feeds. These are the sugars, starches, cellulose and hemicellulose that have been stored in plant tissues. Chemical reactions and microbial activity in the digestive system release the energy in the feed (originally trapped from the sun by the plant) which the animal can use (Nutrients for Cattle, AAF 2003).

Crude Protein. - The beef cow rule of thumb with protein is 7-9-11, which means an average mature beef cow requires a ration with crude protein of 7 percent in mid pregnancy, 9 percent in late pregnancy and 11 percent after calving (Yurchak, 2004).

Northstart LR 9972 showed the highest crude protein percentage at 10.1%, Northstar LR 9573 and CanaMaize CM 440 showed 9.5% and 9.3% respectively, and Pickseed 2320 with the lowest at 7.8%. Northstar LR 9573 and Pickseed 2320 seemed to have the highest starch percentage with 17.9% and 17.4% respectively. Green Bos Farms GS Leafy silage showed the lowest at 12%. Percentages are shown in Graphic 2.



*Graphic 2. - Crude protein and Starch percentages. *Conventional varieties*

Feed quality:

Acid Detergent Fibre (ADF). - ADF is the fibrous, least-digestible portion of roughage. An ADF content of less than 30% on DM basis is an indicator that the forage is high quality (Kopp, 2015). High quality feedstuff should have less than 40% NDF value (Yaremcio, 2012).

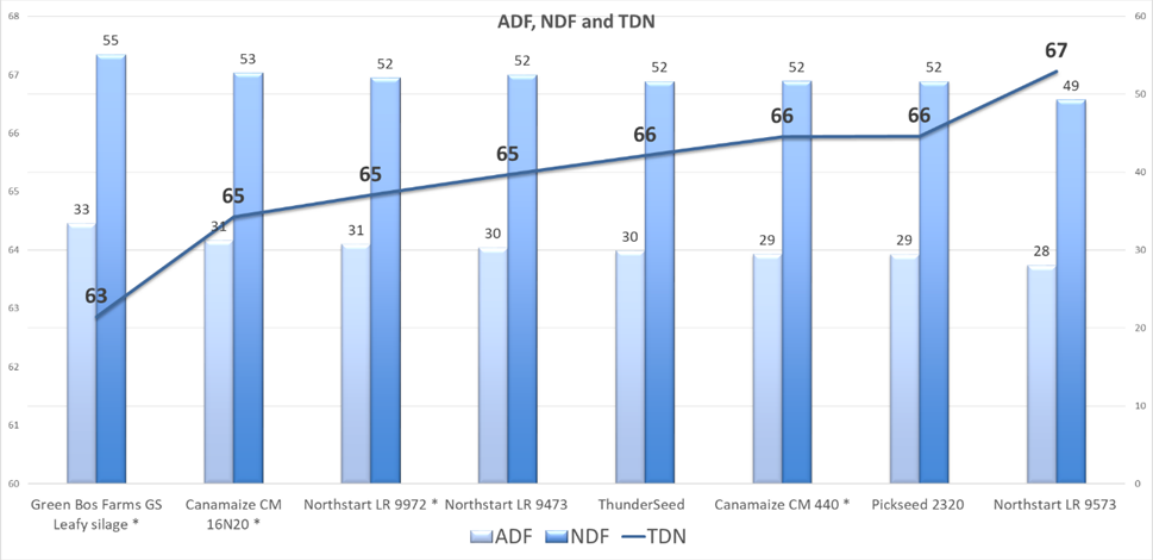
Northstar LR 9573 was the variety with the lowest ADF with 28% ADF value, followed by Pickseed 2320 and CanaMaize CM 440 both with values of 29 %. Green Bos Farms GS Leafy silage showed the highest ADF values with 33%.

Total Digestible Nutrients (TDN) - TDN measures available energy of feeds and energy requirements. As a rule of thumb for a mature beef cow to maintain her body condition score through the winter, the ration must have a TDN energy reading of 55 percent in mid pregnancy (Yurchak, 2004).

Northstar LR 9573 was the variety that had the highest TDN value at 67%, followed by Pickseed 2320 and CanaMaize CM 440 with both having a TDN value of 66%. The lowest was Green Bos Farms GS Leafy silage with 63%.

Neutral Detergent Fibre (NDF) - Commonly called "cell walls." NDF gives a close estimate of fibre constituents of feedstuffs as it measures cellulose, hemi-cellulose, lignin, silica and tannins. NDF has been shown to be negatively correlated with dry matter intake. As the NDF in forages increases, animals will be able to consume less forage. NDF is used in formulas to predict the dry matter intake of cattle.

Northstar LR 9573 was the variety that showed the lowest NDF value at 49%, followed by Thunder Seed, CanaMaize CM 440, and Pickseed 2320 with 51.7%. The highest was Green Bos Farms GS Leafy silage with 55.1%. (Graph 3).



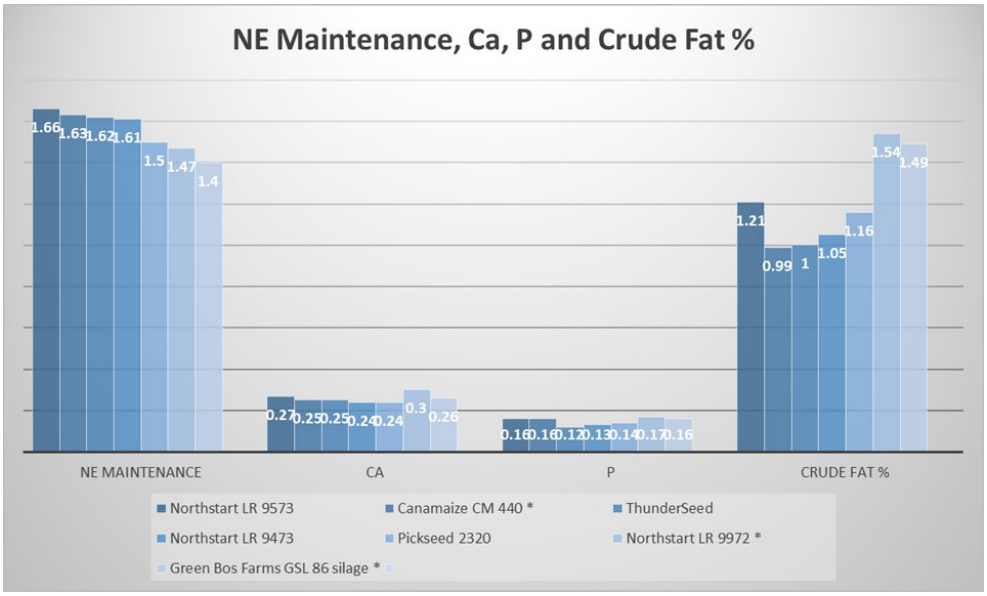
Graphic 3. - 2018 Corn Variety Trial showing ADF, NDF and TDN comparison, Wildwood AB.

*Conventional varieties

Net Energy Maintenance (NEm). - NEm is an estimate of the energy value of a feed used to keep an animal in energy equilibrium, neither gaining weight nor losing weight. A topical alfalfa silage mid bloom is 1.14 NEm Mcal/kg, corn grain is 2.24 NEm Mcal/kg, and wheat straw is 0.64 NEm Mcal/kg.

Northstar LR 9573 showed the highest (NEm) at 1.66, followed by Canamaize CM 440 at 1.63. The lowest was Green Bos Farms GS Leafy silage with 1.4 NEm Mcal/kg value.

Calcium and Phosphorus - CA and P, are the minerals most often added to ruminant diets. The Ca:P ratio is especially important. The ratio should be more than 1.5:1, but less than 7:1. If possible, add the proper amounts of Ca and P to cattle diets, or feed them free choice mineral. The values are seen in Graphic 4



Graphic 4. – 2018 Corn Variety Trial, Net Energy Maintenance, Calcium, Phosphorus and Crude Fat at Wildwood AB. *Conventional varieties

Relative Feed Value (RFV)
RFV - relative feed value has no units, but it is a way to compare the potential of two or more like forages for energy intake. Relative feed value is an index of forage quality calculated from ADF% and NDF%. Forages with values greater than 100 are of higher quality and forages with a value lower than 100 are of lower quality.
Northstar LR 9573 showed the highest RFV at 127, followed by Pickseed 2320 and Canamaize CM 440 at 119. The lowest was Green Bos Farms GS Leafy silage with a 106 value.

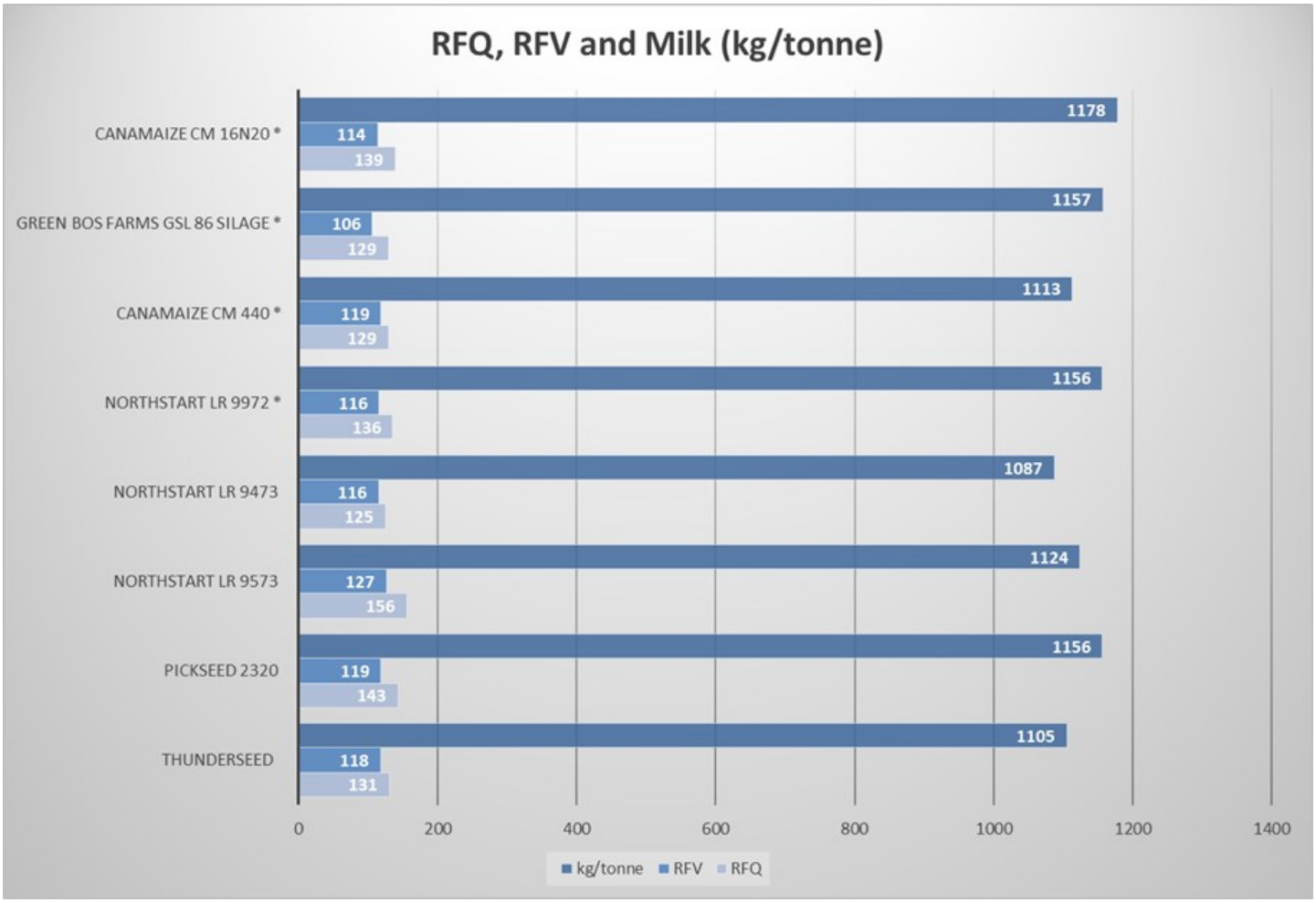
Relative Forage Quality (RFQ)
Researchers at the University of Wisconsin have designed the relative forage quality, RFQ index that uses fiber digestibility to estimate intake as well as the total digestible nutrients "energy" of the forage. The RFQ index is an improvement over the RFV index for those that buy and sell forages. It better reflects the performance that can be expected from cattle fed those forages. (Table 2)
Northstar LR 9573 showed the highest RFQ at 156, followed by Pickseed 2320 at 143. The lowest was Northstar LR 9473 with a 125 value.

Quality	*Suggested Cattle Type*
100-200	Heifer, 18-24 months, Dry cow
115-130	Heifer, 12-18 months, Beef cow and calf
125-150	Dairy, last 200 days Heifer, 3-12 months Stocker Cattle
140-160	Dairy, 1st three months of lactation, Dairy calf

Relative Forage Quality
Table 2. - Relative Forage Quality, Source: Undersander (UW-Extension 2003)

Milk (kg per tonne)
The milk per tonne quality index (MILK2000; Schwab et al., 2003) has become a focal point for corn silage hybrid-performance trials and hybrid breeding programs in academia and the seed-corn industry (Lauer et al., 2005). Milk per ton calculations provide relative rankings of forage samples, but should not be considered as predictive of actual milk responses in specific situations for the following reasons:

Equation and calculation are simplified to reduce inputs for ease of use.
Farm to farm differences exist.
Genetic, dietary, and environmental differences affecting feeding utilization are not considered.
Source: Milk2016 (ALFALFA-GRASS): Index Combining Yield and Quality by Dan Undersander2, 3, D. Combs1, 2, and J. R. Shaver1,3. Department of Dairy Science1 and Agronomy. University of Wisconsin-Madison. University of Wisconsin-Extension3
Canamaize CM 16N20 showed the highest Milk at 1178 kg/tonne, followed by Green Bos Farms GSL 86 silage at 1157 kg/tonne. The lowest was Northstar LR 9473 with a value of 1087 kg/tonne. The values are shown in Graphic 5.



Graphic 5. – 2018 Corn Variety Trial, Net Energy Maintenance, Calcium, Phosphorus and Crude Fat at Wildwood AB. *Conventional varieties

2018 Corn Variety Trial, Wildwood Alberta

Evaluation of Annual Cover Crops for Grazing Purposes

Partners
Union Forage
Performance Seeds
Northstar Seed Ltd.
Yellowhead County
Brazeau County
Bart Guyon (Co-operator)

Background
Cover crops are planted for many purposes, one of which is grazing livestock. What if producers could utilize their equipment to plant cover crops early in the season to provide a high quality source of forage as well as improve the soil at the same time?
In this situation, where the beef cattle owner is also in the cash crop business or in contracts with a cash crop farmer to allow grazing of cover crops, lengthening of the grazing season occurs and results in saving on feeding costs, therefore providing additional economic and environmental benefits.

Objective
Determine dry matter yield and quality on annual cover crops.

Methodology
Plots were seeded at the WCFA Forage Research Site in Yellowhead County, AB on June 7, 2018 and at the WCFA Forage Research Site in Brazeau County, AB on June 8, 2018, with a small plot Fabro disc drill in 5 rows at 22.5cm spacing (9m by 1.14m plot area). Soil testing was done and used to prescribe fertilizer applications. See Tables 1 and 2. We targeted the recommended seeding rate for each seed company. A pre-seed herbicide application was applied.

Note on data collection:
The excessive amount of precipitation on the Yellowhead County site particularly in July (See Graphic 4), prevented us from collecting significant samples from each repetition. Nevertheless, samples were collected from the Brazeau County Site. One square meter from each variety was taken to determine yield and sub-samples were collected to test for nutritional quality. These sub-samples were sent to A & L Laboratories where quality analysis with wet chemistry was performed.

Nutrient analysis (ppm)													
Depth	N*	P	K	S**	Ca	Mg	Fe	Cu	Zn	B	Mn	Cl	BiCarbP
0" - 6"	27	>80	575	5									

Soil Quality			
pH	EC(dS/m)	OM(%)	Sample#
6.2	0.52	11.3	6084428

Excess	*Alkaline*	*Extreme*	*High*	
Optimum	*Neutral*	*Very High*	*Normal*	
Marginal	*Acidic*	*High*	*Low*	
Deficient	*Very Acidic*	*Good*	*Very Low*	

Total lbs/acre	53	160	1149	9
Estimated lbs/acre	109	160	1149	19

Texture *n/a* Hand Texture *n/a*
Sand n/a Silt n/a Clay n/a
Ammonium n/a
Lime n/a Buffer pH n/a

BS n/a CEC n/a
Ca n/a Mg n/a Na n/a K n/a
TEC n/a Na n/a
Est. N Release n/a K/Mg Ratio n/a

*Nitrate-N **Sulfate-S n/a = not analysed

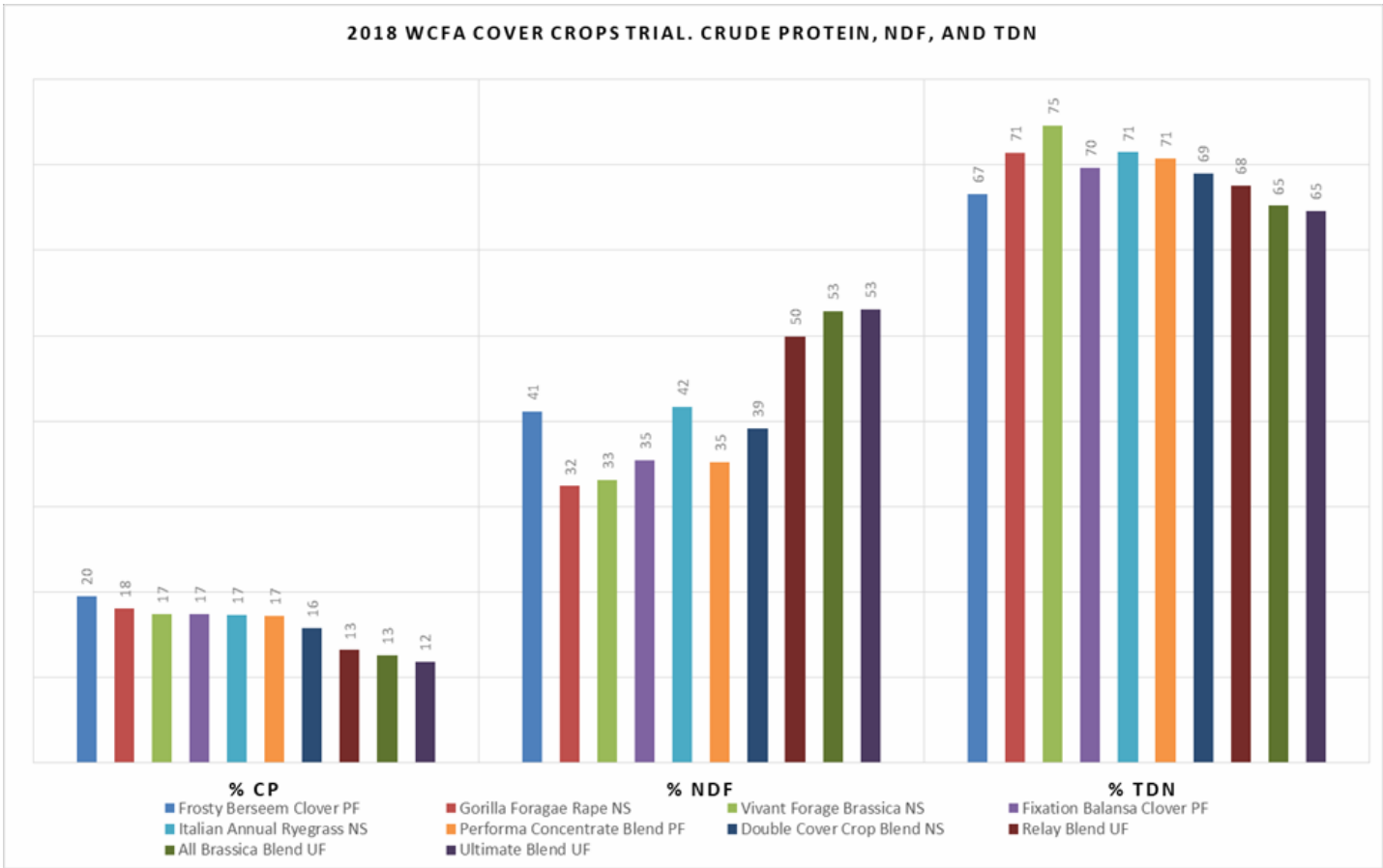
Discussion

Forage Quality

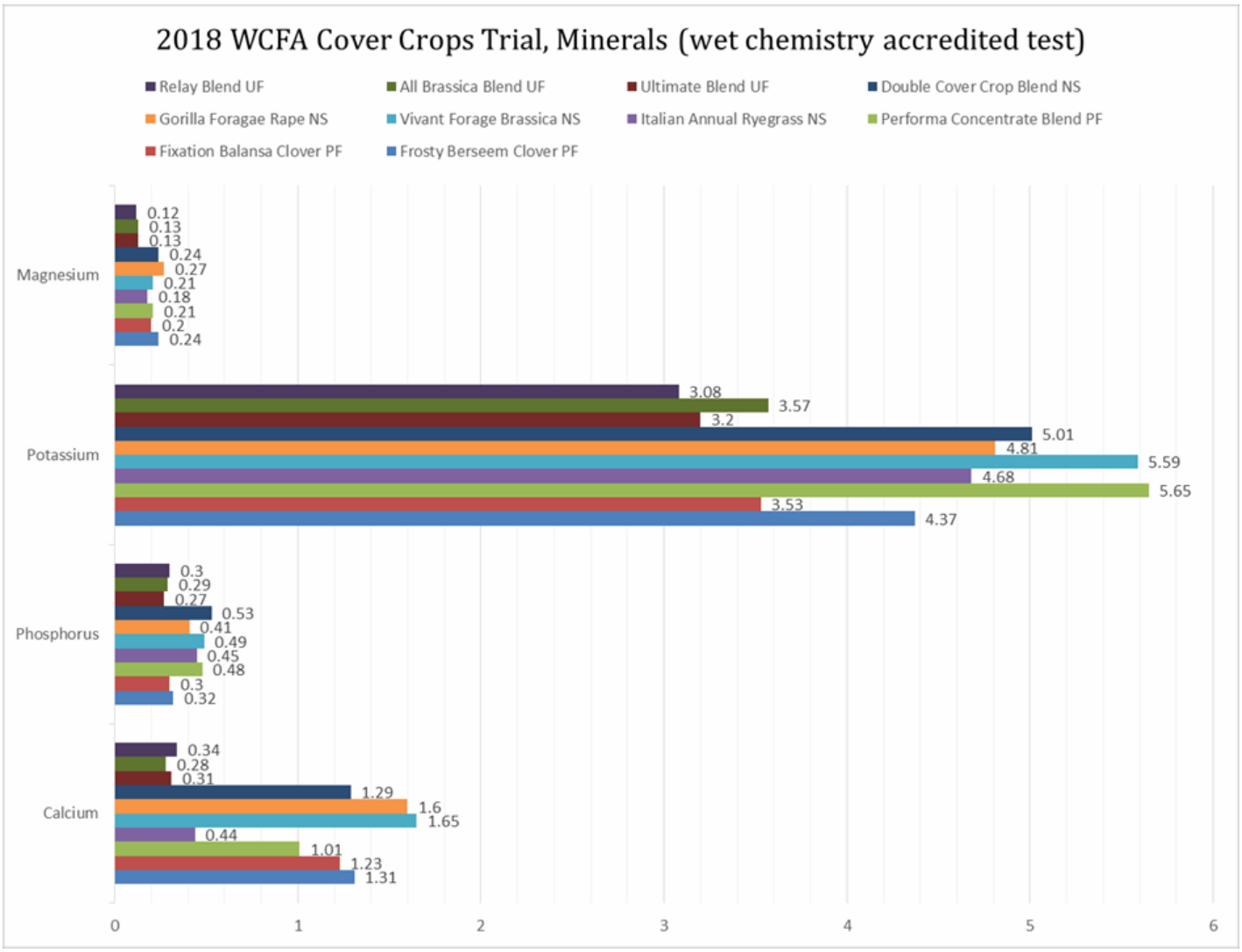
This year the cover crops variety trial was seeded on fair soil moisture, ½ inch from the top, with a soil temperature of 12.6˚C approximately. The quality values for treatments were analyzed by Near Infrared Reflectance spectroscopy (NIR) analysis plus wet chemistry methods for minerals. The highest crude protein CP (%) was from Frosty Berseem Clover PF with 19.97% and the lowest was from Ultimate Blend UF with 12%. The highest Total Digestible Nutrients TDN (%) was from Vivant Forage Brassica NS with 75%. All Brassica Blend UF and Ultimate Blend UF have the lowest TDN, with 65% for both. See Graph 1.

Seeding Rates

For the Union Forage blends, the seeding rate for the cereals mixed with the blend was 45 and 50 lbs/ac. This resulted in 95% of the stand being cereals (Oats). Therefore, we assumed that the cereal seeding rate was too high. It is noteworthy that these seeding rates are used and proven to work for other Union Forage customers. See Pictures 2 and 6.



Graph 1. – 2018 Cover Crop Variety Trial, Crude Protein (CP %), Neutral Detergent Fiber (% NDF) and Total Digestible Nutrients (TDN) Brazeau County AB.
*UF-Union Forage
*NS-Northstar Seed
*PS-Performance Seed

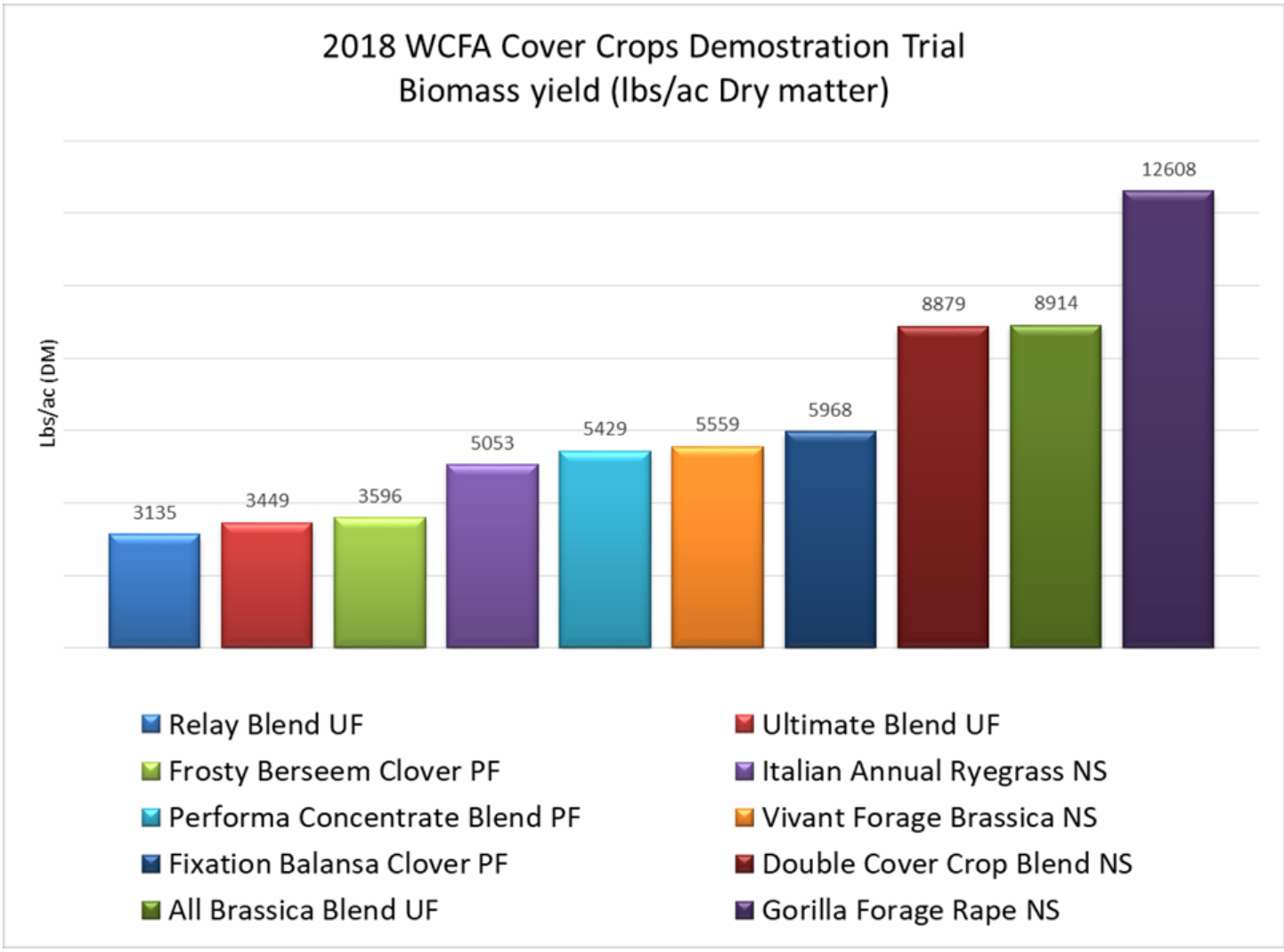


Graph 2. – 2018 Cover Crop Variety Trial, Minerals
Brazeau County AB.
**UF-Union Forage*
**NS-Northstar Seed*
**PS-Performance Seed*

2018 Cover Crop Variety Trial, WCFA Forage Research Site Brazeau County AB.

Dry Matter Yield

Graph 3 shows the comparison of dry matter (Lbs/acre) amongst the varieties. The highest yield being Gorilla Forage Rape NS with 12,000 lbs/ac followed by All Brassica Blend UF with 8,900 lbs/ac. The lowest yield was Relay Blend UF with 3,100 lbs/ac.



Graph 3. – Cover Crop Variety Trial, DM yield. (Lbs/ acre) Brazeau County, AB.
*UF-Union Forage
*NS-Northstar Seed
*PS-Performance Seed

Picture 1. – Northstar Seed Ltd., Gorilla showed plants up to 43 inches and leafs over 7 inches wide (Forage Rape) yielded 12,000 lbs/ac of dry matter. Brazeau County, August 2018

Picture 2. – Union Forage Ultimate Blend mixed with cereal (Oats). 45 lbs/ac cereal seeding rate. Brazeau County, August 2018

Picture 3. –Performance Seed, Performance Concentrate Blend yielded 5,400 lbs/ac of dry matter. Brazeau County, August 2018

Picture 4. – Performance Seed, Frosty Berseem Clover over 23 inches tall. Brazeau County, August 2018

Evaluation of Alternative Cover Crops for Grazing Purposes

Objectives
Determine forage yield and quality

Methodology
Plots were seeded at the WCFA Forage Research Site in Yellowhead County, AB on June 6, 2018 and at the WCFA Forage Research Site in Brazeau County, AB on June 8, 2018, with a small plot Fabro Disc drill in 5 rows at 22.5cm spacing (9m by 1.14m plot area). Soil testing was done and used to prescribe fertilizer applications. See Tables 1 and 2. We targeted the recommended seeding rate for each seed company. A pre-seed herbicide application was applied. One square meter from each variety was taken to determine yield and sub samples were collected to test for nutritional quality. These sub samples were sent to A & L Laboratories where quality analysis with wet chemistry was performed.

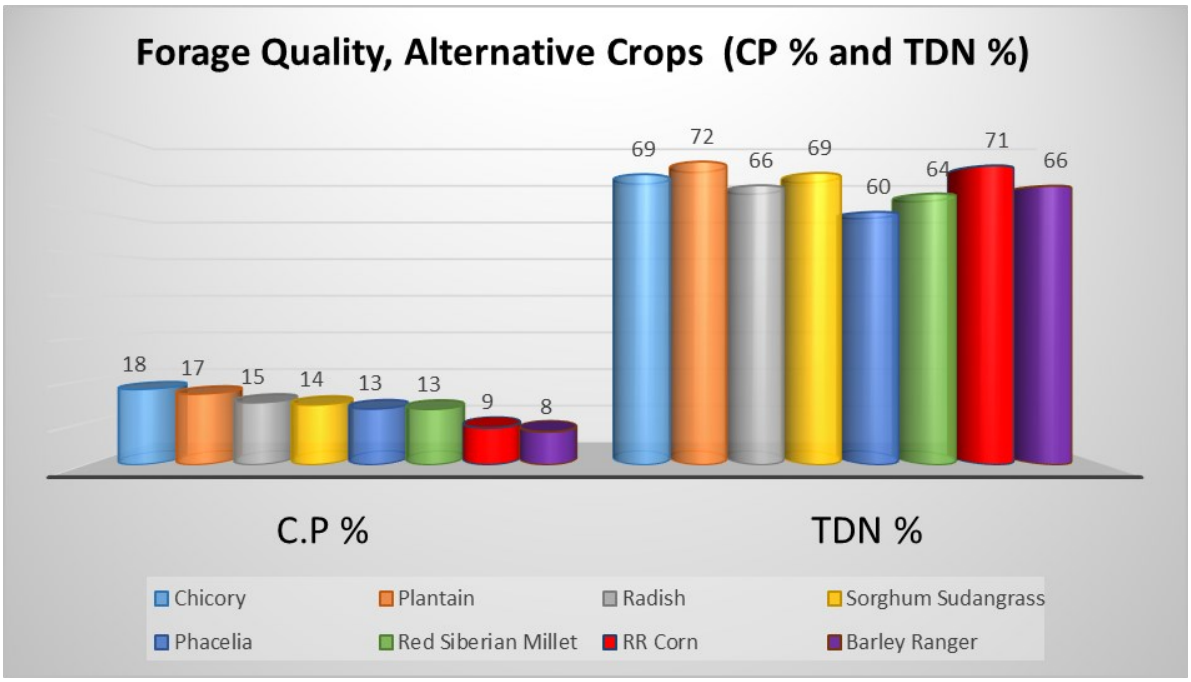
Treatments

Forage annual crop	Scientific name	Seeding rate lbs/ac
Phacelia	Phacelia Tanacetifolia	7
Chicory	Cichorium Intybus	5
Radish	Raphanus Sativus	4.5
Plantain	Plantago Lanceolata	9
Red Siberian Millet	Siberian Millet	20
Sorghum Sudangrass	Sorghum × drummondii	13.5

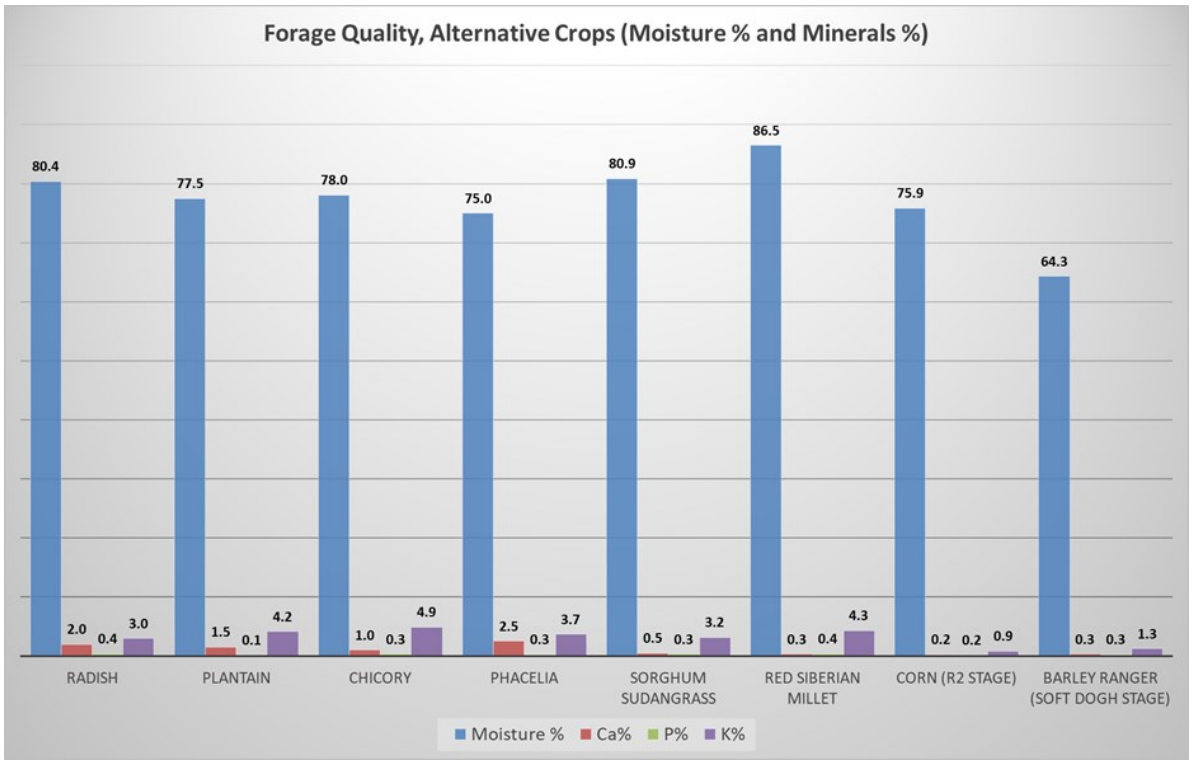
Discussion

Forage Quality
The quality values for treatments were analysed by Near Infrared Reflectance spectroscopy (NIR) analysis plus wet chemistry methods for minerals. The highest crude protein CP (%) was Chicory with 18% and the lowest was Red Siberian Millet with 13%. The highest Total Digestible Nutrients TDN (%) was from Plantain with 72 and the lowest was Phacelia with 60%. See Graph 1.

Phacelia / 5.8 ton/ac dry matter. Brazeau County, August 2018



Graph 1. – 2018 Alternative crops treatments, Crude Protein (CP %), and Total Digestible Nutrients (TDN)
**RR Corn –for reference (red)*
**Barley Ranger –for reference (purple)*

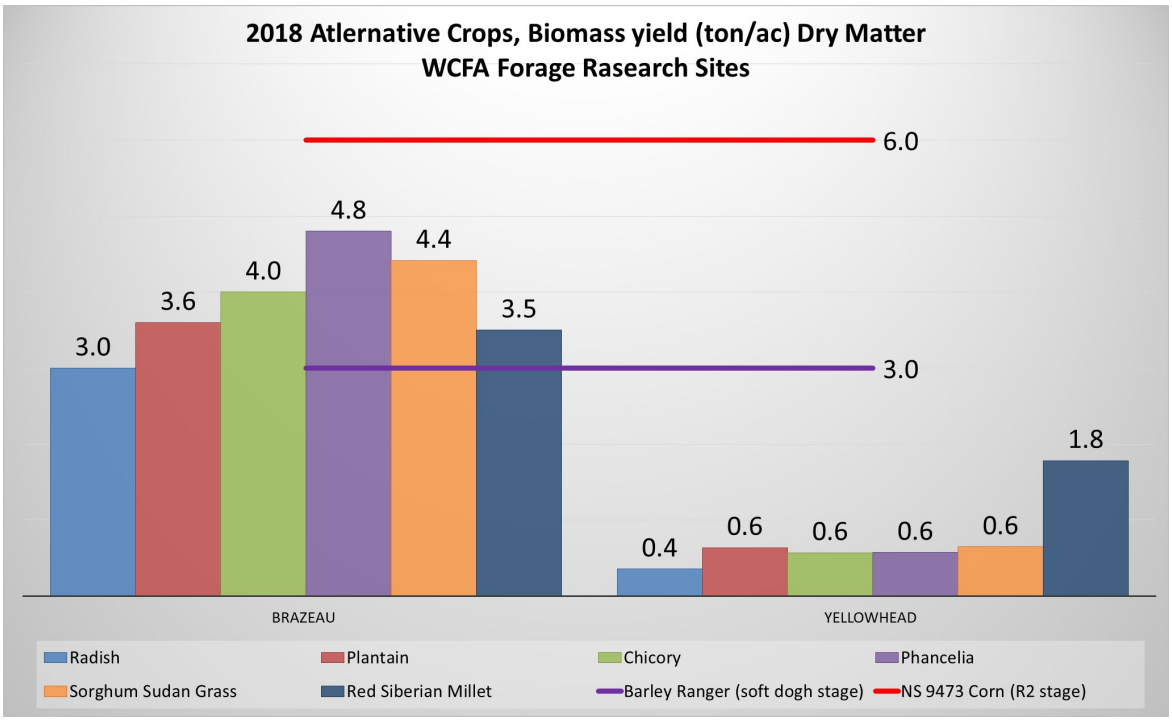


Graph 2. – 2018 Alternative crops treatments, Moisture % and Minerals %

Dry Matter Yield
Graph 3 shows two sites comparison of forage yield expressed in Dry matter (ton/acre, 1 ton = 2000 lbs).

Brazeau County site; the highest yield being Phancelia with 4.8 followed by Sorgum Sudangrass with 4.4 ton/ac. The lowest yield was Radish with 3 ton/ac.

Yellowhead County site; the highest yield being Red Siberian Millet with 1.8 followed by the rest of the varieties with 0.6 and the lowest yield was Radish with 0.4 ton/ac.



Graph 3. – 2018 Alternative crops treatments, DM yield. (Ton/acre, 1 ton=2000 lbs)
**Roundup Ready Northstar 9473 Corn –for reference (red)*
**Barley Ranger –for reference (purple)*

Red Siberian Millet / 4.5 ton/ac dry matter. Brazeau County, August 2018

National Industrial Hemp Variety Evaluation Trials

Partners

Canadian Hemp Trade Alliance (CHTA)
Inno-Tech Alberta
Manitoba Agriculture (MA)
Yellowhead County (YC)
Brazeau County (BC)
University of Alberta, Breton Plots (UofA)

Background

Originating from Central Asia, industrial hemp (Cannabis sativa L.) arrived in eastern Canada with European settlers early in the 17th century. For the next 300 years, hemp was cultivated for food and fibre across the country, including Alberta. However, in 1938 the Opium and Narcotic Act banned the cultivation, possession and processing of hemp in North America. In 1994, Canada began to issue research licences to grow industrial hemp on an experimental basis (Figure 1) and in 1998, the commercial production of industrial hemp was legalized in Canada with Health Canada being the authority to grant licences. (Adopted form Website: agriculture.alberta.ca / Industrial Hemp Enterprise).

Due to hemp being classified taxonomically as Cannabis sativa, Canada's hemp production is regulated by Health Canada, which means producers and manufacturers who want to work with hemp must obtain licenses from Health Canada in Ottawa. Health Canada license forms and information are located online and producers are only allowed to plant certified seed – there is no "common" seed. All hemp planted must be an approved variety, all of which have less than 0.3% THC content in them in field production. (Adopted form © 2019 CHTA. All Rights Reserved)
West-Central Forage Association (WCFA) conducted one of the sites that participated with the National Industrial Hemp Variety Evaluation Trials led by the Canadian Hemp Trade Alliance (CHTA). This research evaluated the perfomance of 11 hemp varieties.

Industrial hemp description
Hemp is an annual broadleaf plant with a taproot. It generally requires 110 days for its growth and should receive around 10-12 inches (25.4 - 30.5 cm) of rainfall throughout the growing season. Soil moisture will affect the ability of the root to penetrate deep into the soil profile, and can demonstrate adaptations to a variety of soil moisture conditions. In some soils the taproot may penetrate 6-12 inches (15 - 30 cm) deep.

Trial Objective

Determine dry matter yield and quality on 6 grain type and 5 dual-purpose type hemp varieties.

Methodology

A pre-seed tank mix herbicide application was applied (Roundup WeatherMAX © + 2, 4-D Ester 700 ©) on May 28, 2018. Plots were seeded at the Yellowhead County (YC) site, on June 7, 2018 and at the Brazeau County (BC) site, on June 8, 2018 with a small plot Fabro disc drill in 5 rows at 22.5cm spacing (9 meters long by 1.14 meters wide). Four replications of each variety were seeded in complete randomized block design to ¼ inches depth with a soil temperature of 15˚C. Soil testing was done and used to prescribe fertilizer applications. Emergence happened around June 18 despite the nominal weed pressure, (Picture 1). Hail damage occurred on July 19th with a small set back on all varieties when the plant growth was at least 4 ft. tall.

Data collection of height (cm), lodging (visual scale of 1-5 with 1 erect, 3 at 45 degree angle and 5 flat on the ground), and disease (photos) and male/females plant counts was conducted in August. Fiber yield was collected on September 9th, by cutting 1m² from plots 3 inches from the ground, and grain yield was collected on September 17th, by harvesting heads by hand from the middle rows for a minimum of 1m² of plot. These heads were then dried and threshed with a stationary thresher.

Picture 1. – Emergence June 8, 2018, Hemp Variety Trial, Brazeau County.

Varieties

The seed was distributed and coordinated by Craig Linde, Diversification Specialist with (Manitoba Agriculture). See Table 1.

Type	Variety
Dual-purpose	Joey
Dual-purpose	Canda
Dual-purpose	CRS-1
Dual-purpose	Altair
Dual-purpose	Silesia
Dual-purpose	Anka
Grain	Grandi
Grain	CRS-1
Grain	Katani
Grain	X59
Grain	CFX-2

Table 1. - 2018 Hemp Variety Trial, six double purpose and five grain industrial hemp varieties.

Discussion

Hemp can be dioecious (separate male and female plants), which is its most common type, as well as hermaphroditic or monoecious (male and female flowers on same plant). Plant counts were performed one week before grain and fiber harvest by counting 9 meters of one row on each plot and variety, average was estimated.

Fiber Production**:** The male plants die after pollinating, causing uneven maturity and varying fibre quality. Plant breeders in Europe have developed hermaphrodite varieties, which are more desirable for fibre production. Evidently higher hermaphrodite plants were found on the dual-purpose varieties with 41 % , versus 0 % found in the grain varieties (See Charts 1 and 2 below).

Grain production**:** Male plants tend to flower and die earlier than female plants, and so to minimize the impact of this on production, many cultivars are bred to be monoecious. This results in plants that are mostly females (a small percentage of male plants are included for pollination) which allows for more seed to be harvested (since male plants do not set seed) and greater fiber production (since male plants die after flowering). Therefore Chart 2 showed greater amount of females at 56 % and smaller amount of male plants at 44 %, with 0% hermaphrodite plants occurring.

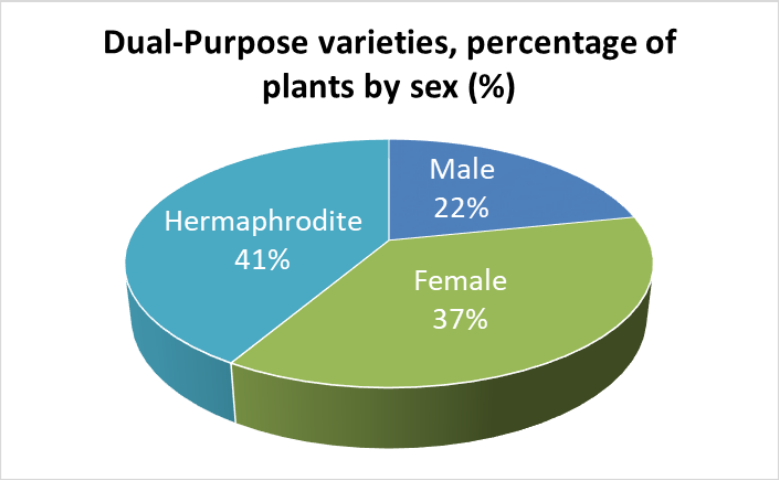


Chart 1. – 2018 Hemp Variety trial. WCFA Brazeau County, Plant counts by sex. Dual-Purpose varieties.

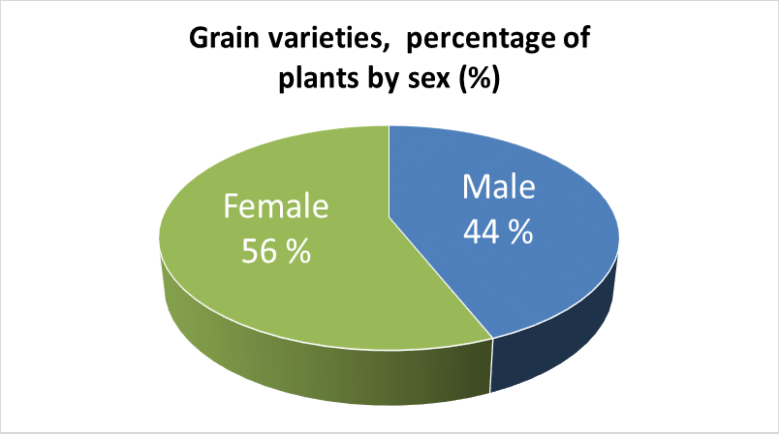
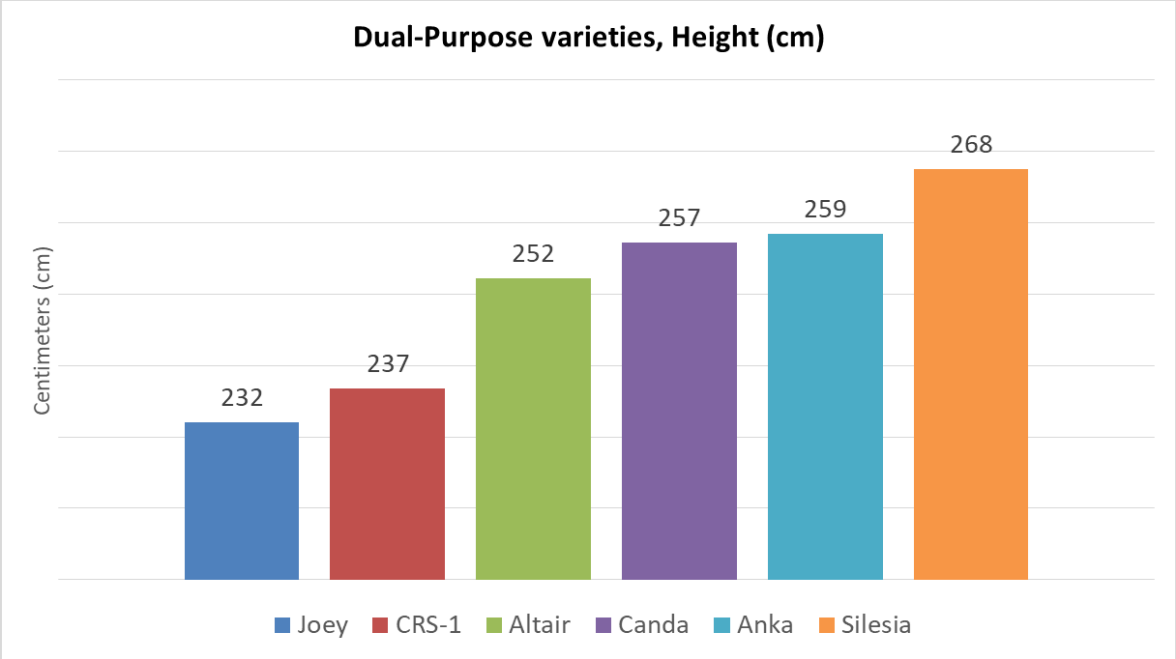


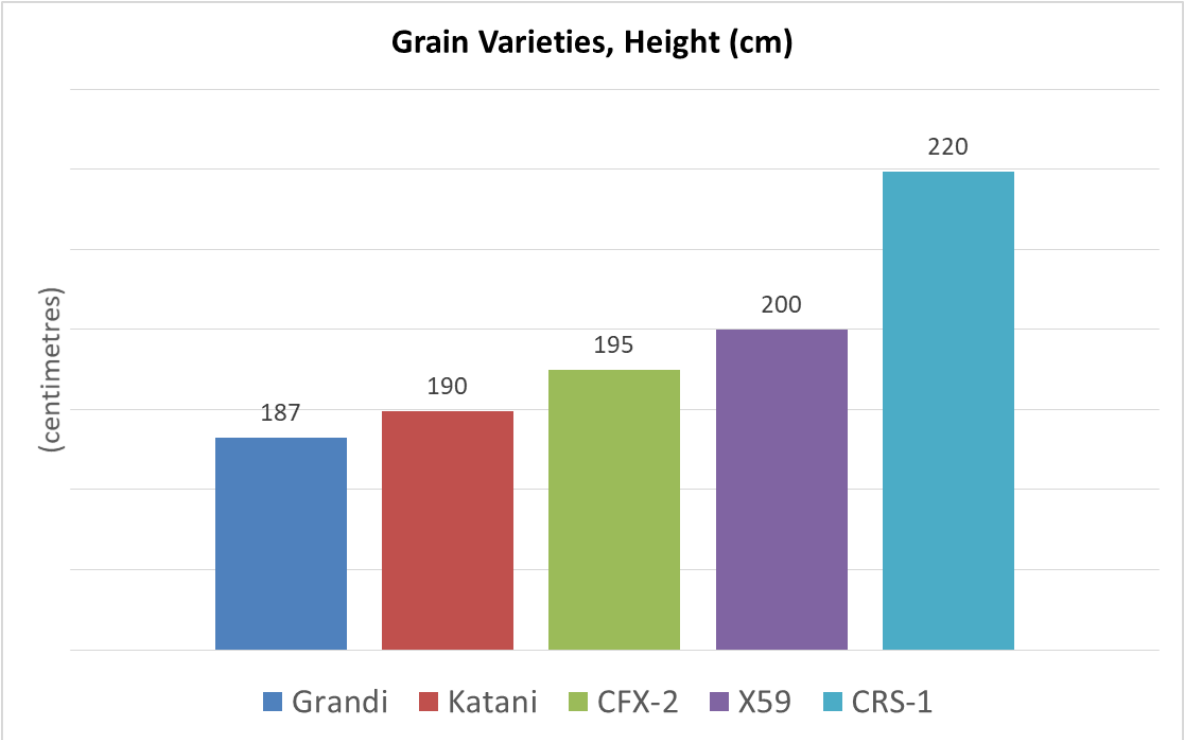
Chart 2. – 2018 Hemp Variety trial. WCFA Brazeau County. Plant counts by sex. Grain varieties.

Plant height

The average of 5 height measurements (from each plot) from ground to top of inflorescence one week prior to harvest was taken. Graphs 3 and 4 showed that dual-purpose varieties measure the highest plant height when compared with grain varieties.



Graph 3. – 2018 Hemp Variety trial. Heights, Dual Purpose.



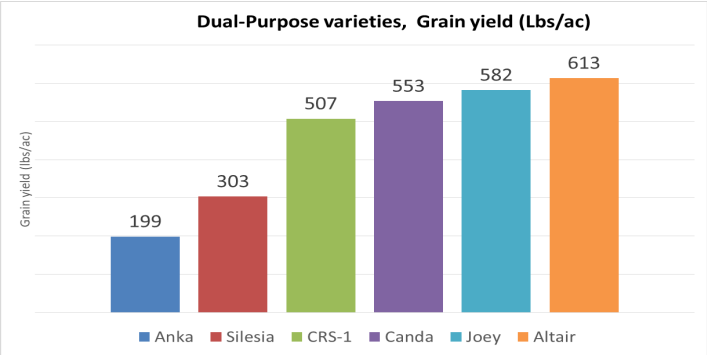
Graph 4. – 2018 Hemp Variety trial. Heights, Grain.

Grain Yield

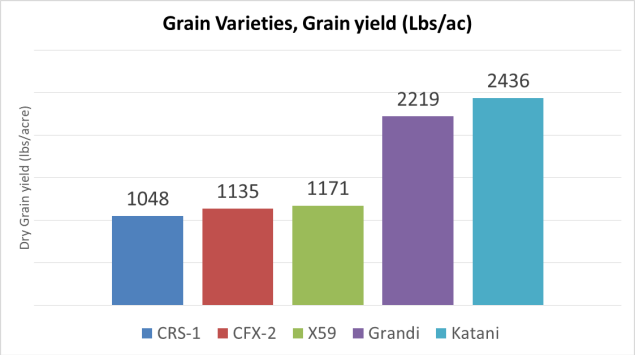
It's recommended that seed be harvested when seed moisture is between 10-20% moisture, or when 70% of seeds are ripe (bracts have dried and seed is exposed). In Alberta, hemp grain yields from research plots have been found to vary from 200 to 1,600 lbs. per acre (220 to 1,800 kg/ha).

The expected yield would likely average nearly 760 lbs. per acre (850 kg/ha) (*Industrial Hemp Enterprise, Website: agriculture.alberta.ca, March 2017).*

Seed heads were harvested by hand with a 1 square meter 1m², then dried and threshed with a stationary thresher. A higher yield showed on grain varieties, with 26% of the total grain yield coming from dual-purpose varieties and 74 % from grain varieties (See Chart 3).



Graph 5. – 2018 Hemp Variety trial. Heights, Dual Purpose.



Graph 6. – 2018 Hemp Variety trial. Heights, Grain.

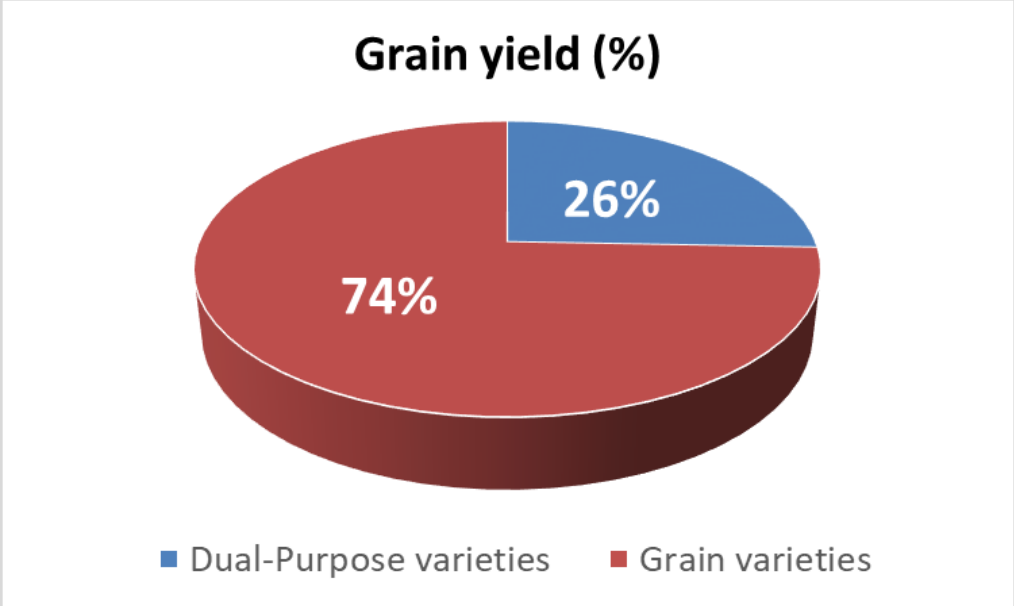


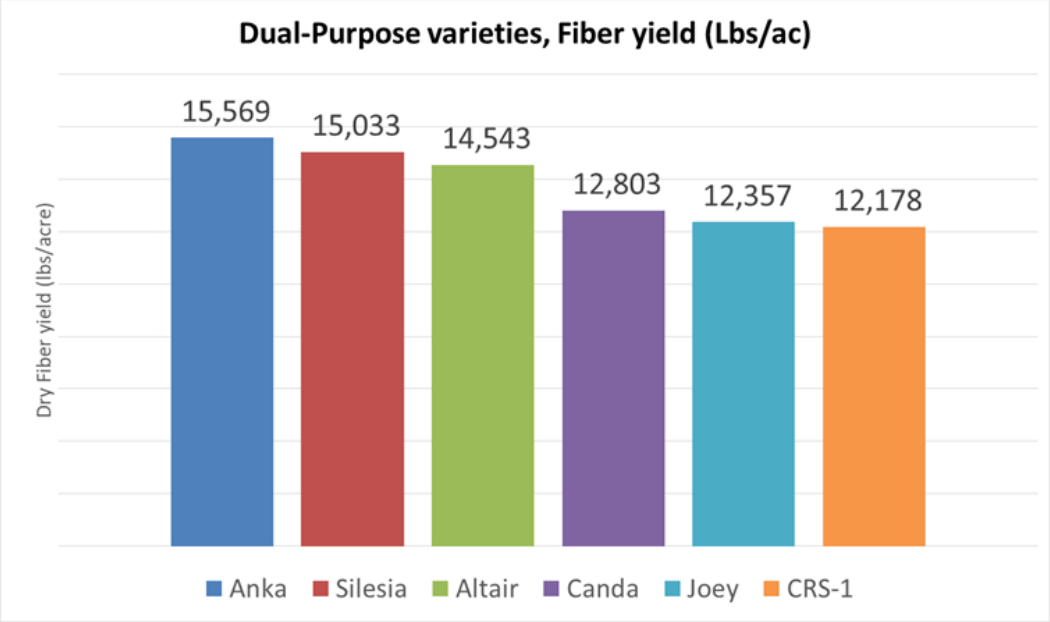
Chart 3– 2018 Hemp Variety trial. WCFA Brazeau County. Grain yields percentage of the total grain yield by variety type.

Fiber yield

Hemp grown for fibre can be harvested as a fibre only crop, or a dual grain and fibre crop. In a dual-purpose scenario, stalk yield estimates are 0.75 to 1.5 tonnes/acre. In crops grown and managed solely for fibre, average yields of 2.5 to 3 tonnes/acre are expected with a range from 1 to 6 tonnes per acre (*Agriculture Industrial Hemp Production and Management, Website: manitoba.ca).*

Plant population and variety have a direct effect on grain and fibre yields, and grain yields have a high potential at low plant populations. Fibre yields however require a denser plant population to achieve maximum yield potential and to reach target stem diameter.

Samples were collected from only the dual-purpose varieties. A 1m² sample of plants was removed from plots 3 inches from the ground. The side branches and heads were removed and dried (pictured below). The highest yielding variety was Anka with 15,569 lbs/acre (7.06 tonnes/acre) and the lowest yielding variety was CRS-1 with 12,178 lbs/acre (5.52 tonnes/acre) (Graph 10).



Graph 7. – 2018 Hemp Variety trial. WCFA Brazeau County. Fiber yield (pounds per acre).

Picture 4. – 2018 Hemp Variety trail. WCFA Brazeau County. Male plants (yellow)

Perennial Forage Variety Evaluation at Multiple Alberta sites

Project Lead
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Co-Investigators
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Barry Yaremcio, Alberta Agriculture and Forestry (AAF)
Fito Zamudio Baca, West Central Forage Association (WCFA)
Vance Yaremko, Smokey Applied Research and Demonstration Association (SARDA)
Khalil Ahmed, Battle River Research Group (BRRG)
Laura Gibney, Foothills Forage and Grazing Association (FFGA)
Mackenzie Applied Research Association (MARA)
Nora Paulovich, North Peace Applied Research Association (NPARA)
Sandeep Nain, Gateway Research Association (GRO)

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

The demonstration component will target the following objectives:
- To demonstrate the regional adaptability of various forage species and varieties.
- To demonstrate the regional adaptability of various grasses and legumes when planted in mixed stands.

Background
The majority of the annual feed requirement of Alberta's cow herd comes from perennial forages, including both grass and legume. Two thirds of the total cost of maintaining the cow herd is comprised of pasture, stored feed and bedding (Alberta Agriculture's Agriprofits Benchmarks). Therefore managing the supply of perennial forage is very important. Identification of high yielding varieties for different areas of the province will contribute to a positive economic return.

Forage producers in Alberta have had limited access to information on new perennial crops in recent years. This project is intended to bridge the information gap by evaluating a number of species and varieties at several locations in Alberta. It includes test cultivars which have been developed in recent years but have had limited regional evaluation beside varieties which are commonly grown in the province. Producers will have access to data applicable to regional conditions from the eight test sites in the province.

2016 WCFA activities

Pre-seed tillage and pre-burn herbicide was applied. Forage varieties were seeded on July 2016, with a small Fadro disc drill in 5 rows at 22.5 cm row spacing, (9 meters by 1.14 meters plot area). Soil moisture was good. 2016 was an extraordinary year with excessive amount of precipitation early in the season, then later in the year dry and hot grasshoppers damage prevented from data collection this year, see graphic 1. For weed control one application of Tropotox Plus at 1.72 lts/acre on July 13th 2016, and then one light mowing later that month. Despite all the effort to keep the plots clean of weeds, the excessive weed pressure prevented from performing emergence counts. Therefore the legume plots were overtaken by the high weed pressure.

2017 WCFA activities

Plant counts were performed in June and plant height and maturity assessments in July. Weed management at the site included mowing and hand weeding. Yield and quality samples were collected during the summer. Stand establishment was good for the perennial grasses and grass/legume mixes despite pest and weed pressure and lack of moisture early in the summer.

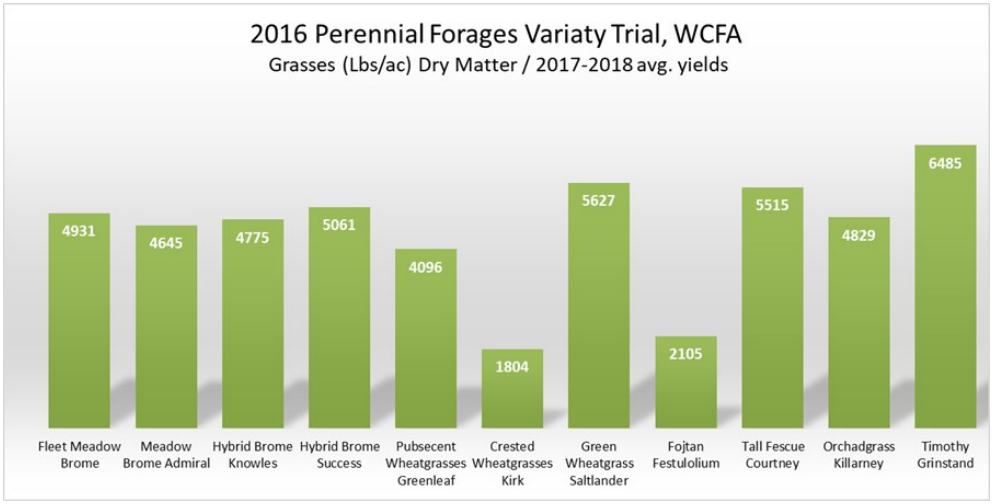
2018 WCFA activities

Plant counts took place in May, and height and maturity assessments in July. Worth mentioning that sainfoin plants weren't found at the plots. Yield and quality samples were collected during the summer of perennial grasses and grass/legume mixes.

Forage yield:

Timothy Grinstand was the highest yield with 6,485 pounds per acre, second highest was Green Wheatgrass Saltander with 5,600 pounds per acre of dry matter. However, the lowest was Crested Wheatgrass Kirk with 1,804 pounds per acre of dry matter. See graphic 3.

For the Mixes (Grasses-Legumes) the highest yield was Fleet/Mountainview with 7,000 the second highest were Fleet/Yellowhead, Success/Yellowhead and Admiral/Spredor 5 with over 6,300 each, and the lowest was Success/Spredor 5 with 5,000 pounds per acre of dry matter. See Graphic 3.



Graphic 3. – Average dry matter forage yield for various grasses from Wildwood AB, 2018.

2018 Regional Silage Variety Trial

An important component of the annual feed supply for Alberta's cattle producers comes in the form of silage, green feed and swath grazing. The selection of annual crop varieties that produce high forage yield and/or nutritional quality can be a significant factor influencing profitability.

Participating Organizations

- Battle River Research Group, Forestburg;
- Chinook Applied Research Association, Oyen;
- Gateway Research Organization, Westlock;
- Lakeland Agricultural Research Association, Bonnyville;
- Mackenzie Applied Research Association, Fort Vermilion;
- North Peace Applied Research Association, Manning;
- Peace Country Beef and Forage, Fairview;
- Smoky Applied Research and Demonstration Association, Falher;
- West Central Forage Association, Entwistle;

Major Sponsors

- Alberta Agriculture and Forestry, AOF Program and CDC North
- A & L Canada Laboratories Inc.

Davidson Seeds, Degenhardt Farms, Dyck Seed Farm, Kevin Elmy, Fabian Seeds, Lindholm Seed Farm, Mastin Seeds, Solick Seeds, H. Warkentin

Trial Information

Silage yield and nutritional information has been collected by several applied research associations at sites ranging from Oyen in the south to Fort Vermilion in the north of Alberta. Varieties of barley, oats and triticale commonly used for silage, green feed and swath grazing were included in the trial. Pea/cereal mixes and spring/fall cereal mixes have also been evaluated. Growing conditions at the trial sites in 2018 ranged from below average to excessive moisture. The cereal trials, (barley, oats & triticale), were planted at recommended seeding density rates with recommended fertility.

The spring/fall cereal mixes were included in 2018 to evaluate options for fall grazing, as the winter cereal growth continues after silage harvest. It also remains vegetative, resulting in forage with high protein content late in the year. Target seeding rate of the spring component of the mix was 75 per cent of the recommended rate while the winter cereal was seeded at 50%. These mixes were harvested at soft dough of the spring cereal.

Data submitted in 2018 has been summarized by crop in the following tables. Information collected since 2012 has been included in a separate summary below each crop table. The information is presented as compared to the control variety (in bold). Yield of the test varieties are expressed as wet tons/acre (ie. 65% moisture which is typical of silage production). Data sets which did not meet minimum quality standards and variance levels were excluded.

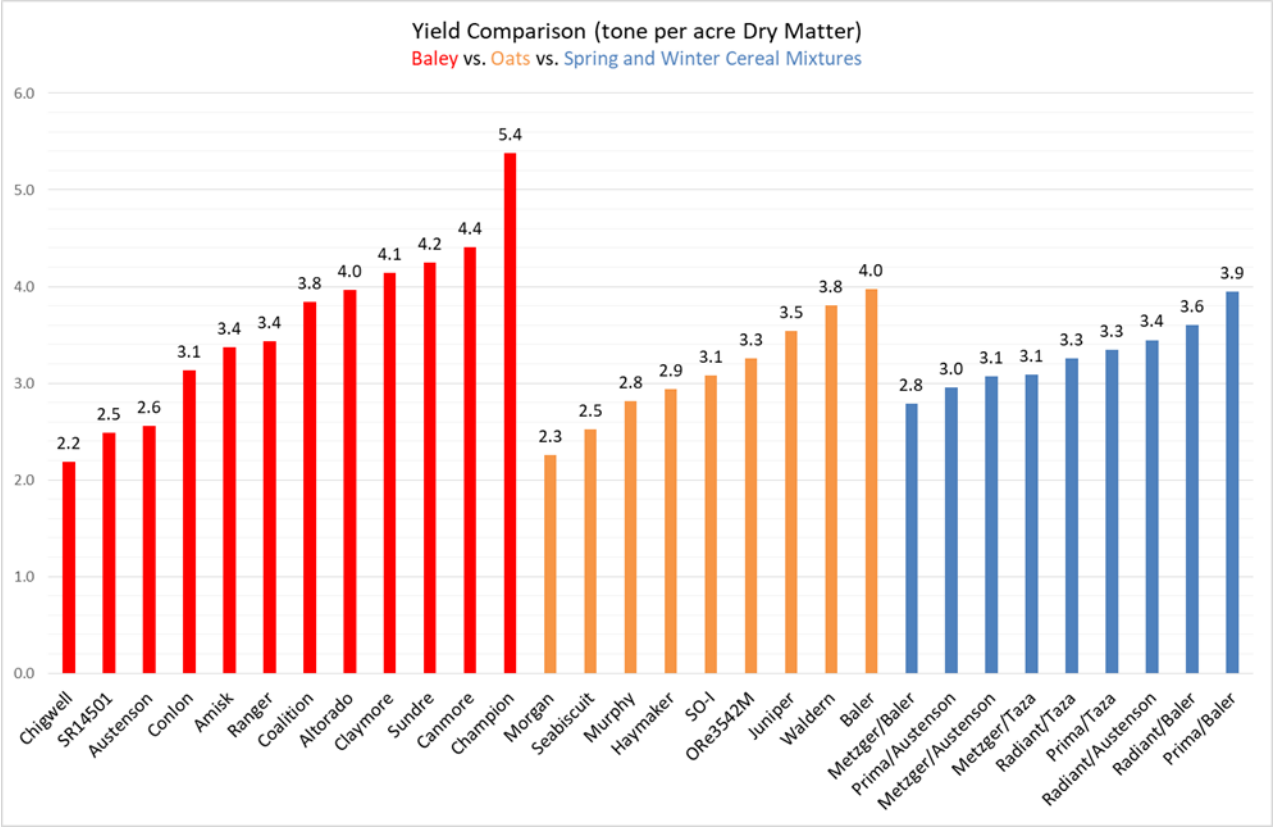
Test Yield Categories

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 and/or target yields are anticipated to be of low, medium or high productivity. 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 15 to 20 per cent 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 also 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 two sub-samples from each variety or mix from each location. Only six key 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).

The information in the next graphics just includes data from WCFA's research site in 2018.



Location: WCFA Forage Research Site, Wildwood AB.
Seeding date: June 6th, 2018

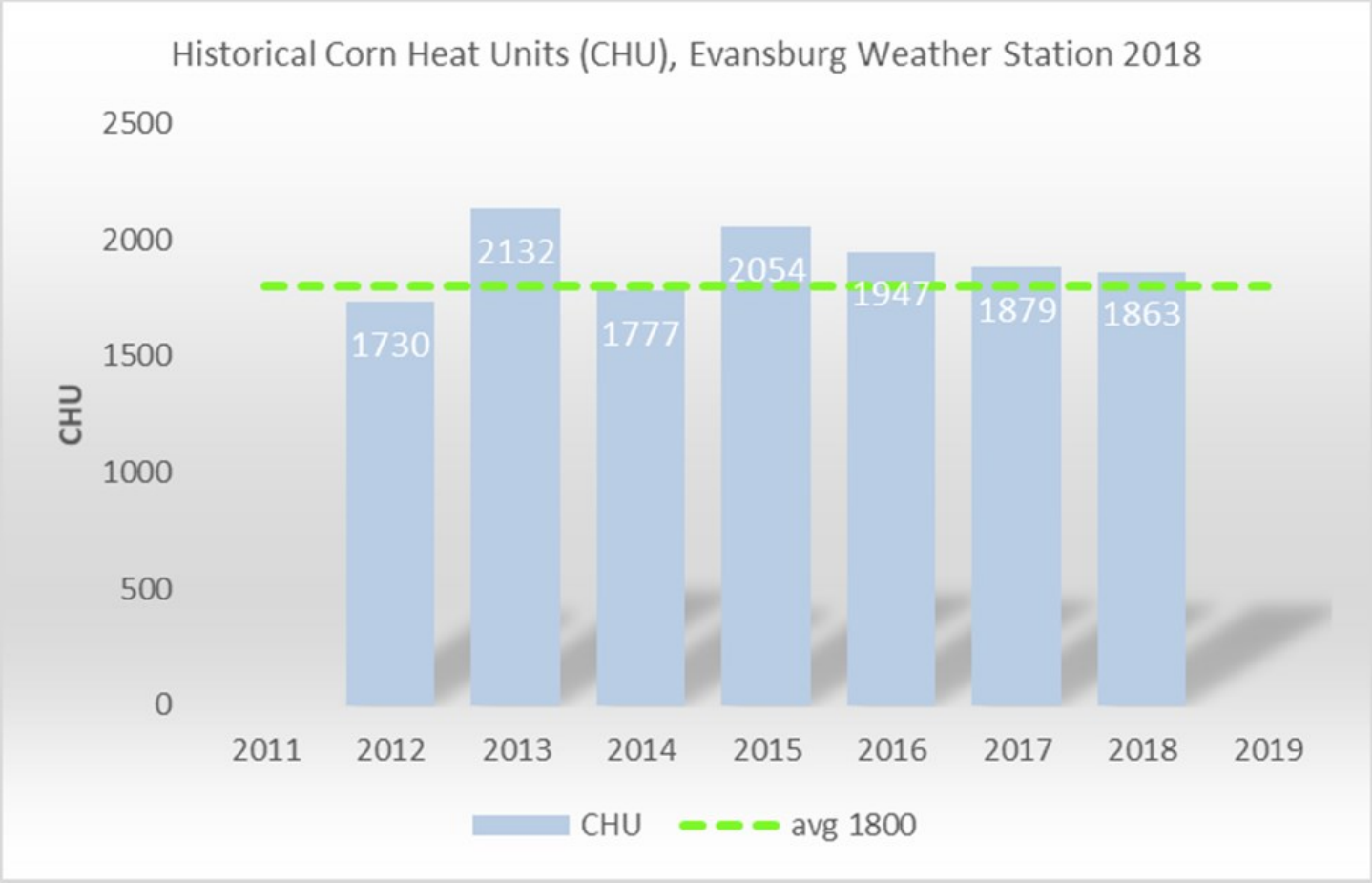
Dry matter forage biomass (tones/acre)

The varieties that showed the highest dry matter yield are as follows:

- Barley. - Champion with 5.4 tones/acre DM
- Oats. - Baler with 4 tones/acre DM
- Mixtures. - Prima/Baler with 3.9 tones/acre DM

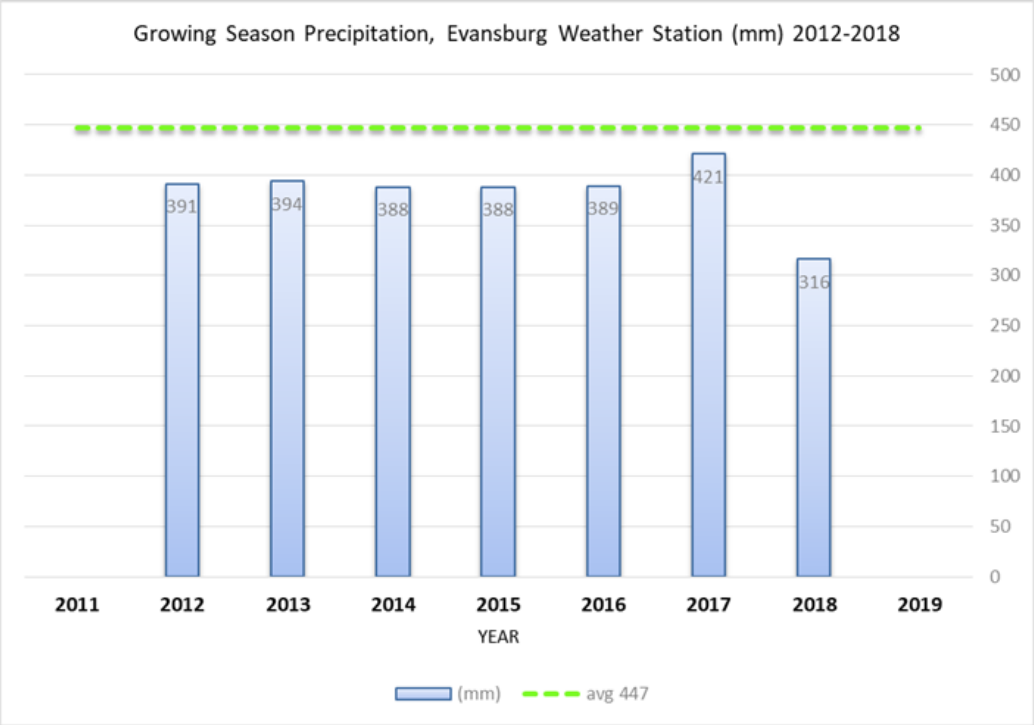
Environmental Records

Corn Heat Units (CHU): CHU is an energy term calculated for each day and accumulated from planting to the harvest date. CHU was calculated from May 1st to October 31st, using data from the Evansburg weather station. In 2018 the total CHU were 1863 units, 63 units above average. See Graphic 6.

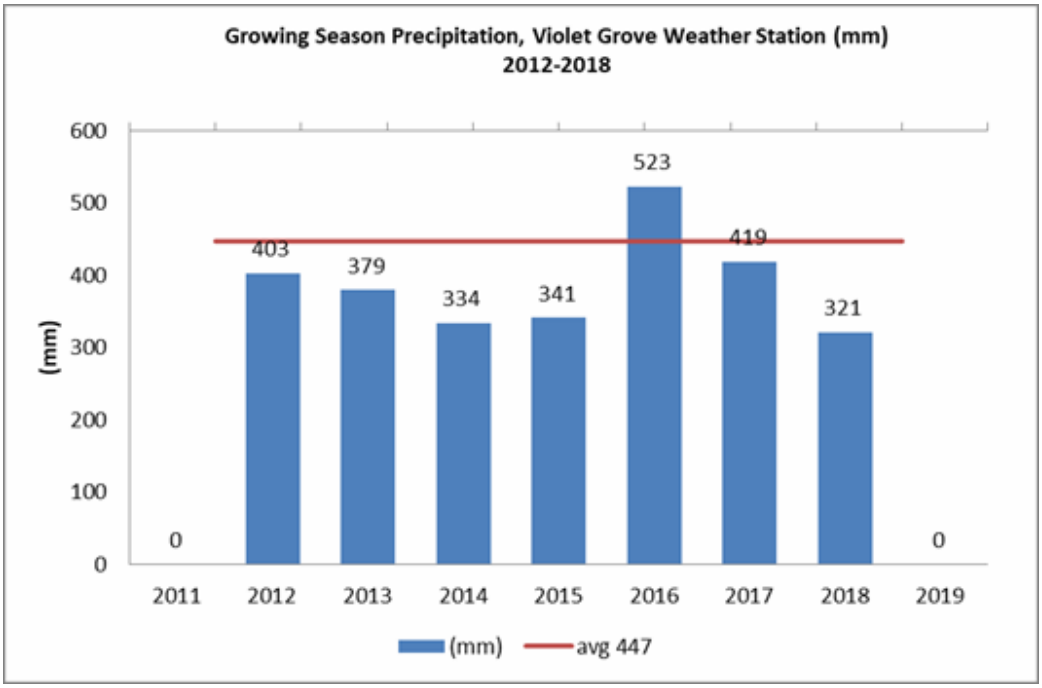


Graphic 6. - Historical CHU at the Evansburg, Alberta weather station from 2012 - 2018. The average for this weather station is 1800 CHU.

Precipitation: Growing Season precipitation of the gray wooded soil zone from 1971 to 2000 was 447mm (Agroclimatic Atlas of Alberta, 2003)



Graphic 7. – Growing Season Precipitation in the Evansburg weather station from 2012 to 2018.



Graphic 8. – Growing season precipitation for the Violet Grove weather station, 2012 to 2018 at Brazeau County.


WEST-CENTRAL
FORAGE
ASSOCIATION