PCBFA

PEACE COUNTRY BEEF & FORAGE ASSOCIATION

Annual Report 2015

"Local Information for Peace Country Producers"

Peace Country Beef & Forage Association

The Peace Country Beef & Forage Association was founded in 1982 by livestock producers in the Fairview and Hines Creek area for the purpose of demonstrating new forage varieties and technology. The PCBFA is a non-profit, producer driven, unbiased applied research association, focusing primarily on forage and beef research. We are currently made up of 10 directors, 4 full-time staff and approximately 170 members from across the Peace region.

Mission:

The Peace Country Beef & Forage Association is a producer group with the goal to be a hub of innovative, relevant and local beef, forage and crop information for Peace Country Producers.

Vision

A Peace Country producer's first stop for optimizing beef, forage and crop production to maximize profitability with innovative and credible information.

Mandate:

The Peace Country Beef & Forage Association believes that the sustainability of rural communities in the Peace River region will be dependent upon a strong agricultural economy with livestock production as its foundation.

Our Region:

PCBFA works with producers in an **area stretching from High Prairie to the B.C. border and from Manning to Valleyview.** Our focus area **has 1.9 million acres** of pasture land and **118,000 breeding cows.**

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PRESIDENT'S REPORT
Peter Tindall

2015 Year in Review

2015 has been a very busy year, with almost too much to remember! It was again a year of change. Once again, we were across the Peace Region hosting workshops and field days and doing projects. This fall has been busy with more workshops and conferences.

We were pleased to see our funding levels stay at similar levels to past years. We received funding from a few different sources, which was great for adding a few new projects.

We had some changes with our staff, as Stacy Pritchard left us and we'll be looking to hire someone new in 2016.

I have enjoyed the past four years that I have spent on the board, and look forward to still catching up with PCBFA at events. Good luck to the new chairman and new board members!

Board Members 2015
Back Row (l-r): Conrad Dolen, Gary These, Stan Logan, Jordan Barnfield,
Front Row (l-r): Thomas Clayton, Peter Tindall, Nancy Van Herk, Randy Kuriga
Missing: Preston Basnett, John Prinse

MANAGER'S REPORT
Monika Benoit, B.Sc. Ag

2015 has once again been a memorable year of growth, challenges and excitement for PCBFA. It has been an interesting year in the cattle business, with another year of high prices, paired with some extreme weather conditions, including drought and grasshoppers. The past year will be remembered as another year of change for PCBFA; changes within the association as well as changes in thinking in our industry, in how we manage our land, our resources and our people.

PCBFA had a very interesting field season, doing more seeding and field work than we've ever done before. On more than one occasion, we felt like 'real ranchers' as we untangled electric fence wire and dealt with yet another equipment breakdown! We received funding to for the first time from ACIDF, the Alberta Crop Industry Development Fund for a pasture rejuvenation project, which was very exciting, as it allows the Association to be more sustainable when we can source funding from different avenues. Akim once again coordinated our applied research program, and has done a wonderful job of compiling local, applicable information, so please enjoy as you go through the Annual Report!

We have had an extremely successful list of extension events this year, with attendance tipping the scales at every event! The excitement and passion of the producers of the region is apparent at all of our events, and I have heard so many great stories from our members about what they've learned, how they've gone home to try things they've learned, and how their experiments turn out! Kaitlin McLachlan, our extension coordinator has done a fabulous job of putting events together over the past year, and I'm so glad to have her on our team! Stacy Pritchard was also a great part of our staff team over the past year, but has left us to pursue other endeavors, and we wish her well. Also a key part of our team has been our summer technician, Carly Shaw, who has stayed on past the summer, in between her part-time classes to help us out and keep things running smoothly.

We had a very successful year celebrating the International Year of Soils in 2015, as declared by the UN. Our board members, staff and members have experienced looking at their land and management systems differently, when we start to consider the soil as a living, breathing thing, not just as 'dirt.' Through speakers such as Gabe Brown, Christine Jones, Don Campbell and Peter Donovan, we have had our thinking and our paradigms challenged, and we have started looking at things differently, with excitement and the idea of figuring out a better way of doing things. At one of our most recent board meetings, we had finished our agenda and were visiting and the topic of cocktail cover crops came up and someone asked who was growing a cocktail this year, and it was apparent that if you weren't putting in a cocktail, you were the one doing things 'differently!'

The group of 10 producers who make up our board are always a privilege to work with, and this past year has been no different. Their vision, wisdom and senses of humor all make my job a pleasure to do, and I am honored to take direction from such a progressive group of cattlemen and women. Three of our directors are ending their terms this year, Peter Tindall, Gary These and Randi Kuriga. I am very sad to see them go, and have appreciated all of their time, guidance and support; their boots are going to be big ones to fill!

Staff Members 2015
Left to right: Stacy Pritchard, Monika Benoit, Kaitlin McLachlan, Carly Shaw & Akim Omokanye

I feel blessed and privileged to work with such a wonderful, forward-thinking group of people, from the board, to the staff to our members. You challenge me, teach me and make me strive to always be open minded and I couldn't ask to work in a better industry or with a better group of people.

To everyone who has been part of PCBFA for the past year, thank you!

Monika Benoit

2015 Report from the Agriculture Research Extension Council of Alberta
by Janette McDonald

ARECA is the provincial arm of PCBFA. The Board of ARECA is made up of representatives from our 9 member organizations, one of them being PCBFA. ARECA's goal is to help PCBFA serve farmers. Your rep is Randi Kuriga. Randi serves as Vice-Chair of the ARECA Board.

Some highlights in 2015:

- ARECA worked with our team (9 associations) to deliver a Soil Health Initiative with the Alberta Crop Industry Development Fund. This initiative enabled our members to deliver over 20 meetings and programs across Alberta. It also funded www.albertasoilhealth.ca. On this site we added short articles about soil quality and soil health in Alberta. We also interviewed producers across Alberta and created **Producer Highlights**. PCBFA featured Jordan Barnfield from Teepee Creek. Stacy Pritchard volunteered as provincial coordinator for the **Producer Highlights**.
- ARECA enabled the delivery of successful Regional Variety Trials across Alberta. Together, we tested 78 new cereal varieties and 76 new pulse varieties.
- ARECA enabled the delivery of the Provincial Pest Monitoring program funded and operated Alberta Agriculture and Forestry. Together, ARECA associations monitored 9 important insect pests. PCBFA participated in this project for the first time in 2015.
- ARECA started a *Connections* newsletter, designed to "connect" our 9 member organizations. Each month, we develop a highlight sheet of one association and distribute to each Board member of each association. PCBFA was featured in July.
- ARECA also delivers the provincial Environmental Farm Plan (EFP). ARECA has over 10 technicians from the member associations delivering EFPs. PCBFA delivered the highest number of Environmental Farm Plans to producers. Monika Benoit is also a part of the Operations Committee, which provides operational guidance for the EFP program.
- ARECA team hosted the Western Canada Soil Health Conference in Edmonton. This was attended by 425 people and was sold out! Soil health has become a hot topic across North America. PCBFA, through ARECA, is delivering information to farmers in the field.
- ARECA enabled the inaugural Verticilium Wilt Survey, funded and operated by the Canadian Food Inspection Agency, in co-operation with the canola industry. Together, ARECA associations surveyed 83 fields on a very short timeline. PCBFA jumped in and did their share.
- The ARECA Board developed a new process that aims to differentiate provincial programs from local programs. Our goal is to develop over-arching programs that fit for all or most of our 9 member associations; while supporting the independent, local programs of each individual association. So far, the process is working well and will be reviewed in 2016.
- Late in 2015, ARECA decided it was timely to renew their Environment Team. This team will help guide ARECA's programming and policies regarding environmental issues.

2015 BOARD OF DIRECTORS

President:	Peter Tindall	High Prairie
Vice President:	Conrad Dolen	Fourth Creek
Treasurer:	Jordan Barnfield	Teepee Creek
Secretary:	Randi Kuriga	Whitelaw
Directors:	Thomas Claydon	Valleyview
	Stan Logan	Cleardale
	Gary These	Peace River
	John Prinse	Enilda
	Nancy VanHerk	Eureka River
	Preston Basnett	Eureka River

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Municipalities and Counties

MD of Fairview No. 136	MD of Spirit River, No. 133
MD of Peace, No. 135	Birch Hills County
Clear Hills County, No. 21	Big Lakes County
Saddle Hills County	MD of Greenview, No. 16

County of Grande Prairie

Alberta Agriculture & Forestry Advisory

Calvin Yoder, Forage Specialist—Alberta Agriculture & Forestry	Spirit River
Freeman Iwasiuk, Beef Business Development—Alberta Agriculture & Forestry	High Prairie

ACKNOWLEDGEMENTS

PCBFA greatly appreciates the following contributors for helping us deliver important extension programs and conduct essential projects in 2015:

Funders

Agricultural Opportunity Fund (AOF)
Alberta Agriculture and Forestry (AF)
Agriculture & Agri-Food Canada (AAFC)
Alberta Crop Industry Development Fund (ACIDF)

Municipal Districts & Counties

County of Grande Prairie No. 1
MD of Fairview, No. 136
MD of Peace, No. 135
Clear Hills County, No. 21
Saddle Hills County
MD of Spirit River, No. 133
Birch Hills County
Big Lakes County
MD of Greenview, No. 16

Corporate Sponsors

BEST Environmental Technologies
Dynamic Seeds Ltd
Golden Acre Seeds
Tru-Test

Agri-Business & Collaborators

Dynamic Seeds Ltd
BrettYoung Seeds
DuPont Pioneer
CPS
UFA
Foster's Seed & Feed
Teepee Creek Hauling
High Prairie Seed Cleaning Plant
PickSeed
Barenbrug, USA
BEST Environmental Technologies
Golden Acre Seeds
Grande Prairie Regional College
Weaver Bros. Auctions Ltd.
Union Forage
Prairie Coast Equipment, Fairview

Co-operators

Conrad Dolen
Pat & Jay Eaton
Lawrence & Lori Andruchiw
Chris Roy
Murray Lewis
Soames Smith (Uddersmith Dairy)
Zahacy Farms
Kevin Meneice
Bill Smith
Thomas & Laura Claydon
Elton Kauffman
Jordan Barnfield
Graeme Finn (Union Forage)
Mark & Tracey Vetsch
Steve Johnson
Koos & Barbara Bos
The Hales
Denis Bouvier
Keith & Denise Wilson
Annette & Mike Rosendal
Kirk McLaughlin
Mark Wurtz—Birch Meadows Colony
Tim McGrath
Glen Leitch
Darryl, Keith & Keiran Hodges
Murray Hartman
Paul & Lori Kinnee
Bill Hanson
Shirley & Vern Strid
Holly Critchon

Partners

North Peace Applied Research Association
Mackenzie Applied Research Association
Smokey Applied Research & Demonstration Assoc
Calvin Yoder, AF, Spirit River
Agriculture & Agri-Food Canada
Alberta Agriculture & Forestry
ARECA

SERVICES PROVIDED BY PEACE COUNTRY BEEF & FORAGE ASSOCIATION

- Extension services: production decision making, technical assistance and problem solving

- Feed Testing and Ration Balancing
  - Ongoing throughout the winter

- CowBytes “Kitchen” Courses-
  Set one up at your kitchen table with some neighbours
  - Use your feed analysis and end up with a balanced ration for your operation
  - Cost $25 per farm unit

- Soil Testing and Fertilizer Analysis

- Livestock Water Quality Testing

- Age Verification and Traceability Concerns

- Environmental Farm Plan Assistance and Workshops

- Growing Forward 2, Water Management Planning Assistance

- Nutrient Management Analysis and Assistance
  - Informing producers on the benefits of manure as a fertilizer source
  - Proper manure testing techniques

- Peace Country Beef School
  - To inform and educate producers on beef fabrication and marketing of beef (gate to plate)
  - Hands on learning involving live and slaughtered carcass evaluation

- Gallagher Portable Scale and an Electronic Tag Reader for Rent ($25/day or $40/day for both)

- 320 bushel Creep Feeder Available for Use

- Portable Solar Watering Systems Available for Use (County of Big Lakes)

2015 IN REVIEW

ASB AND EXTENSION HIGHLIGHTS

Extension Activities for Every Producer

Highlights from our Extension Activities Across the Peace Country

2015—International Year of the Soil, The Alberta Soil Health Initiative

The United Nations had declared 2015 as the "International Year of the Soil". PCBFA, along with the other 8 ARECA groups formed the Alberta Soil Health Initiative with the intent to bring soil health to the spotlight through joint projects, speaker tours, and highlighting producers who are improving their soil health throughout the province with producer highlights. 2015's Soil Health Initiative was capped off with the Western Canadian Conference on Soil Health in Edmonton.

Soil Health 101

We kicked off our 2015 extension activities with our Soil Health 101 workshops with Dr. Yamily Zavala from the Chinook Applied Research Association. We held one workshop in High Prairie on April 22 & the second in Sexsmith on April 23rd. We learned about the physical, chemical, and biological properties of the soil and how we can nurture our soil biology.

Soil Carbon Challenge with Peter Donovan

On June 15th, we hosted Peter Donovan for a Soil Carbon Challenge Workshop near the Eureka River Hall at Maverick Livestock. The day began with a classroom session on soil carbon and how sequestering carbon could help to mitigate carbon dioxide in the atmosphere as well as help improve organic matter in our soils and decrease our reliance on inorganic fertilizers.

Stockmanship with Curt Pate

In June, we hosted Curt Pate in Eaglesham on the 16th and in Beaverlodge on the 17th for Stockmanship Clinics. Both days were well attended and we were able to hear about how Curt approaches handling cattle in the morning and then after lunch we headed out for a demonstration which included moving animals through gates, with a bud box and finishing off with loading them back on the trailer to go home!

More Grass, More Profit & Better Quality of Life with Don Campbell

On June 23rd, 24th & 25th, we welcomed Don Campbell back to the Peace for a series of grazing workshops in High Prairie, Brownvale, and Grovedale. We learned principles for grazing cattle as well as rejuvenating pasture and managing your farm business holistically. These were very well attended workshops and everyone left with a new understanding of grazing for profit and quality of life.

Controlled Traffic Farming Field Day

We finished off our busy June with a Controlled Traffic Farming Field Day at Hillsboro Farms south of Cleardale on the 29th. We had speakers from Controlled Traffic Farming Alberta, who explained the principles and benefits of implementing CTF on your farm. We finished off the day with a soil pit, looking at how CTF affected soil structure and then had a UAV demonstration from Toerper Tech!

Building Soil – Creating Land (Part 2) with Dr. Christine Jones

At the end of July we were able to once again host Dr. Christine Jones from Australia in Rycroft. The morning presentation included information on soil microbiology and the liquid carbon cycle, and after a great lunch we headed out to the PCBFA plots to take a look at the perennial forage varieties there, as well as to check out the soil with Christine. It was a great day of learning, and being able to have a hands-on look at Peace Country soil with an expert like Dr. Jones was definitely a highlight of our summer!

Morning at the Research Farm

We kicked off August with a tour of the Fairview Research farm on the morning of the 5th. Breakfast was served, followed by a tour of the various plots and projects going on at the research farm, including some corn, cocktail cover crops, silage variety trials, and information from our Research Coordinator Akim, as well as Graeme Finn of Union Forages, and Calvin Yoder of Alberta Agriculture & Forestry. The morning ended with a presentation on electric fencing from Jason Williams with TruTest.

Valleyview Field Day

Our second field day in August had us in Valleyview, where we started the day in Pat Eaton's Corn! We heard from Pat on his experience growing corn, as well as from Akim and Calvin Yoder on a herbicide project for controlling volunteer canola in corn. We also heard from Pioneer on the varieties of corn available. The afternoon was spent with Roger Andrieuk looking at soil pits in Thomas Claydon's field. We learned about soil structure and got to see it first hand in a few different areas of the field!

Whole Farm Water Management with Rob Avis

August 17th, 18th & 19th saw us taking a whole farm and holistic approach to water management with Rob Avis. We were in Silver Valley, Marie Reine, and Kinuso looking at various projects that producers wanted to do to hold water, and Rob showed the group various ways to survey the landscape to find the easiest way to hold the water needed.

Cattle Marketing Information Night

Our lone September event found us in Rycroft the evening of the 21st with representatives from AgriClear and AFSC to talk about cattle marketing options and risk management. The evening was full of questions, learning, conversation, and great networking.

Ration Balancing Workshops

With dry conditions and limited feed in the area, we hosted a series of ration balancing workshops across the Peace in October. We were in High Prairie on Oct 2, Valleyview Oct 6 and Savanna and Hines Creek on Oct 7. In each location we went through the basics of formulating a ration, and then producers had the chance to try out CowBytes ration balancing software to formulate their own rations!

Biosecurity Workshop

On Oct 20 we hosted our first Biosecurity Workshop in Fairview. We had a great turnout and producers learned about zoonotic diseases, carcass disposal, on-farm biosecurity practices as well as the basics of vaccination protocols. There was a lot of great discussion from those in attendance!

We have been contacted by many producers in the Peace Region, not only to do Environmental Farm Plans, but to also help with filling in forms for grants that are available through Growing Forward 2. We always take time to help producers fill out these grant applications and give them tips on the best way to do so. Our staff is also available to help complete Environmental Farm Plans. We are also always on the lookout for information to provide to producers on any available programs and help them identify what projects qualify and which do not.

Growing Forward 2
A federal-provincial-territorial initiative

Alberta Government

Canada

Herd Management Software Workshop & VBP Training

November 17 had us back in Rycroft for a great evening learning about herd management and traceability. We heard from BIXS on the recent changes, making it more user-friendly, as well as the information producers can both put in and get out of the system. Then we heard from bioTrack, a herd management software company that ties in with BIXS so you only have to enter your animal data in one place! The evening wrapped up with the opportunity for producers to take the VBP On-Farm Food Safety Training. This training is a requirement for the GF2 Food Safety program, so we were glad to see so many get their training!

Dugout Workshop

The last event that we hosted in 2015 was a Dugout Workshop held in Grovedale on Nov 27. We had a great crowd on hand to learn from Dan Benson, the local Alberta Agriculture Water Specialist. Topics covered included in-house treatment of surface water, dugout design and construction, and aeration. The afternoon was filled with great questions.

Western Canadian Conference on Soil Health

2015 was the International Year of the Soils, and to wrap up a year of Soil Health awareness and great events across the province, the Western Canada Conference on Soil Health was hosted in Edmonton Dec 8-10, 2015. We had a great turnout for this conference, selling out registration before the early deadline for a total of 400 registrants representing producers, industry and the scientific community. We had speakers from all over North America—soil scientists and producers alike. The conference was enjoyed by all in attendance and we look forward to the next one!

Holistic Management Courses with Don & Bev Campbell

We were very excited to once again welcome Don & Bev to the Peace for another round of Holistic Management Courses, one in Valleyview January 14th-16th & 21st-23rd, and the second in Demmit January 28th-30th and February 4th-6th. The course covered goal setting and had everyone write a personal mission statement and a 3-part holistic goal. Next, participants looked at holistic financial planning, and the principles of grazing. Finally, the groups learned about making decisions that are socially, environmentally, and financially sound.

Winter Watering Systems Tour

On January 30th we hosted our annual Winter Watering Systems Tour in Eaglesham. There were over 55 producers who joined us on this beautiful day! On the tour, we visited Birch Meadows Colony, where Mark showed us his solar watering system and some of his Frost-Free Nose Pumps. Jeff Anderson joined us from Frost-Free Nose Pumps and discussed how to install them and gave some tips on how to keep a pump running smoothly. We finished off the day with a Growing Forward 2 Update and discussed funding opportunities for various watering systems.

Peace Country Beef Cattle Day

February 1st saw us back in Fairview, hosting Peace Country Beef Cattle Day with NPARA. This year we welcomed Dr. Anibal Pordomingo from Argentina, and Clayton Robbins, a Nuffield Scholar from Manitoba. The theme of the day was “High Quality Forages for Growing and Finishing Cattle”.


PCBFA

Join the Excitement!
AGM & Cocktail Cover Crops!

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Issue 133
February 2016

Forage Facts

You're Invited!
Join Us for our Annual General Meeting!

By: Kaitlin McLachlan & Carly Shaw

Stop what you're doing and mark your calendar for the evening of February 26th for PCBFA's Annual General Meeting at the Dunvegan Motor Inn in Fairview! This year's AGM is sure to be a great one! We have the ranching soil health legend himself Neil Dennis coming to town as our guest speaker, our Research Coordinator Akim will be presenting some information and some results of one of our current research projects, and our Extension Coordinator Kaitlin will be announcing our next study tour destination! Would you like to become more involved with PCBFA? There will be opportunity to become a member of PCBFA's Board of Directors as we say goodbye to three of our wonderful directors, Peter Tindall, Randi Kurtiga, and Gary Thiele. And as always there will be a fabulous supper with lots of networking, and visiting with neighbours and fellow producers!

We are very excited to be welcoming Neil Dennis as our guest speaker for the evening! You may remember his talk "Grazing to healthier soils" from his keynote address at the Western Canadian Conference on Soil Health in Edmonton this past December. He will be joining us from his farm near Waverly in southeastern Saskatchewan, where he is a fourth generation farmer. After years of trying to manage his farm conventionally through drought conditions, Neil and his wife took a Holistic Management course and learned about how grazing management could increase the productivity of their soils. Soon they were using high stock density grazing to build the health of their soils by increasing organic matter and putting nutrient back in the soils. Since then, Neil has gone from running 200 head on 1,700 acres to 800 and up to 1000 head on the same land. Neil is a firm believer in that whether we are cropping or grazing, we need to be using regenerative practices – healthy land produces healthy forages, which in turn produces healthy cattle.

During our business meeting, we will be holding elections to replace our three outgoing board members. Being a member of PCBFA's Board of Directors gives you an opportunity to be a part of the action here at PCBFA! Perks of the job include having first opportunity to host research projects, opportunities to represent PCBFA at provincial conferences, and help to determine the direction that PCBFA goes with our research and extension activities! You may be thinking that this will be a huge time commitment, but its not! We typically have evening meetings once every 2 months. So if you or someone you know is interested in becoming a director and would like more information, please feel free to give us a call and we can connect you with one of our board members!

Registration will open up at 4:30 with coffee and a variety of door prize draws to enter in. Our business meeting will get going at 5:00, with supper to be served at 6pm. Following supper, presentations by our staff will lead into Neil Dennis' talk. The evening will be capped off with discussion amongst neighbours and friends.

We hope to see you there!
To RSVP, please give Kaitlin a call at 780-835-6799

Forage Facts

The Forage Facts newsletter is a monthly article that provides timely information relevant to the beef and forage sector. It is also the best source of information about what events we have planned and how you can participate! Forage Facts is mailed out to the membership, including our participating municipal districts and counties. We also have a small group that the newsletter is emailed to. The newsletter is an invaluable way to communicate information to our members, as well as inform them of new ideas on the horizon. Also keep your eyes open in April for when we give Forage Facts a facelift with a new format!

Forage Country Magazine

The association also produces a bi-annual publication to highlight past projects, new projects, hot topics, current events and past extension. The publication goes to 4000 rural mail boxes in our partnering municipalities. With our winter edition delivered in early February, look for a new one in summer 2016!


SPECIAL POINTS OF INTEREST:

- Upcoming Events in Centerfold!
- Highlights from the Western Canadian Conference on Soil Health

IN THIS ISSUE:

FORAGE COUNTRY

WINTER 2016

The Classroom Agriculture Program is Looking for Volunteers!

Submitted by Classroom Agriculture Program

When asked "where does food come from?", too many kids say the grocery store. The classroom Agriculture Programs (CAP) is trying to change that. CAP has been around since 1985 during that 30 years, more than 600,000 grade four students have participated in the program. These students have learned where their food really comes from and why agriculture is important to Alberta.

The Vision of CAP is *"To provide students with quality, comprehensive agriculture learning experiences that lead to a greater understanding of and support for the agriculture industry in Alberta"*. We do this through a volunteer base of about 300 people who work in the agriculture industry. Our volunteers are the real strength of CAP. A class may have presentations from a veterinarian, someone who works on a chicken farm, someone who owns a grain farm, works in a soil lab, or runs a country grain elevator. As you can see the variety of professions in agriculture is large and varied. In addition to the volunteer presentation each student also receives an "Activity Booklet". The booklet is full of puzzles and games. Each of our commodity members has a page in the booklet. Our members are Alberta Barley, Alberta Beef, Alberta Canola, Alberta Chicken, Alberta Institute of Agrologists, Alberta Irrigation Projects, Alberta Milk, Alberta Pork, Alberta Pulse Growers, Alberta Veterinary Medical Association, Alberta Wheat, Eastern Irrigation District, and the Egg Farmers of Alberta, and our partner is Agriculture For Life.

CAP is endorsed by the Minister of Education and the Minister of Agriculture and Forestry. This year, we are honoured to be chosen as the winner for the 2015 Friends of Education Award, given out by the Alberta School Boards Association.

PCBFA is proud to be involved with the administration of the Classroom Agriculture Program in the Peace Region! If you would like to become a part of CAP, either as a volunteer, member, or partner, or if you would like more information, please contact Don George, General Manager of CAP by phone at 587-877-2544 or email don.george@classroomagriculture.com or Kaitlin McLachlan with PCBFA at 780-835-6799 or email kmclachlan@gprc.ab.ca.

Peace Country Beef & Forage Association Website

If you haven't already, be sure to check out www.peacecountrybeef.ca. The website has been a great asset to the association and is a great way to keep people informed and allow us to share information with a larger audience. Information about the association, upcoming events, ongoing projects, and photos of our past events are all posted. There is also a link to our website from the ARECA webpage.

Social Media

PCBFA is very active on social media, extending our reach to connect with producers in more non-traditional ways.

We can be found on Facebook at www.facebook.com/peacecountrybeef. We currently have 160 followers on Facebook.

We also use Twitter under the handle @PCBFA and have over 450 followers.

Through the use of social media, we can instantly share news and stories that are affecting the industry. It is also a wonderful tool for advertising our upcoming events and sharing project updates while standing in the plot.

ASB Environmental Stream Program Update

2015 marked the second year of our Environmental Stream of programming under the Agriculture Service Board stream of funding given out by the Provincial Government. This program is being performed in Big Lakes County, Birch Hills County, MD of Spirit River, Saddle Hills County, MD of Fairview, Clear Hills County, and the MD of Peace.

On-Farm Nutrient Budgeting 2014-2016

The second year of data was collected on 6 farms across the Peace for this new project. The goal is to create awareness of nutrient distribution through nutrient budgeting to decrease the potential for water body and riparian area contamination from crop land, pasture land and livestock wintering sites. We hope to create site-specific nutrient budgets and maps of each site at the end of the three years to get an understanding of nutrient distribution on different types of production systems. Overall, the goal will be to be to gather information that will help to utilize farm nutrient resources. The sites chosen across the region range from annual cropping sites to a wintering site, and one site that is used for both annual cropping and livestock grazing. Check out page 64 for the complete update on this project.

Whole Farm Water Planning Projects

The premise of this project is to implement whole farm water planning to help utilize water that is currently present and that which comes from rain/snow events more efficiently and effectively (for household, landscape and/or livestock use). The project uses keyline design and permaculture principles.

This year we worked with Rob Avis of Verge Permaculture to host two field days where we looked at two operations, one in Silver Valley at Keith and Denise Wilson's and one in Kinuso at Kirk McLaughlin's. Rob showed us a holistic way to look at the way water flows over the landscape. We surveyed the areas and Rob identified a few different projects that could be done on the sites to help hold water and potentially use for irrigation.

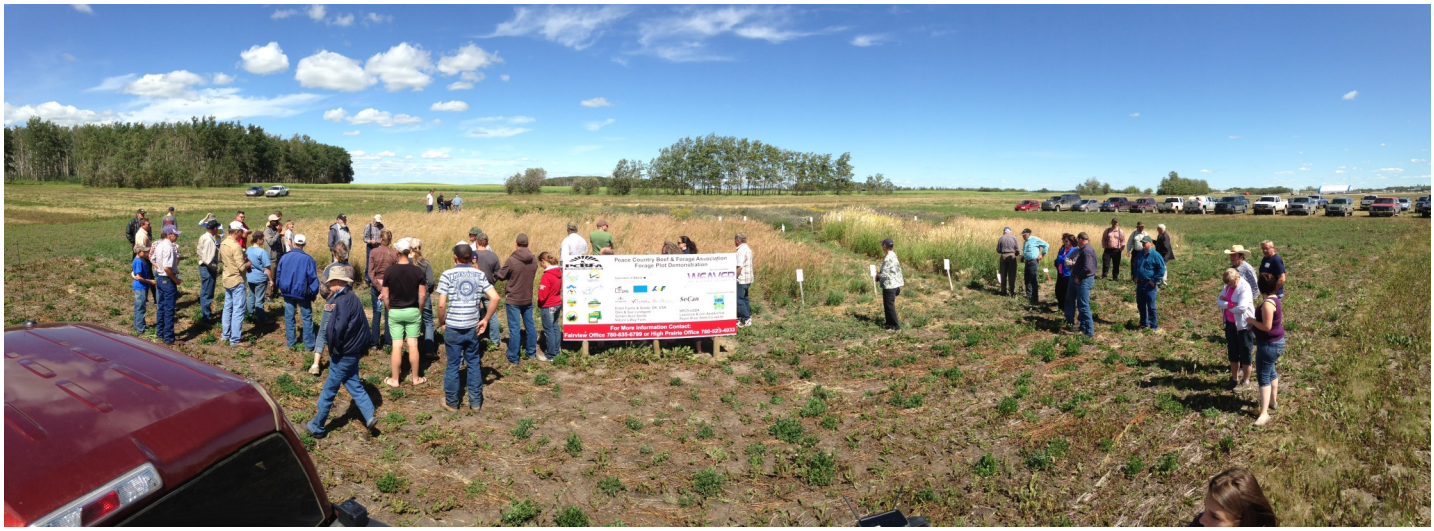
Riparian Protection through Pasture Management

Cross-fencing, the creation of riparian pastures, the use of off-site watering systems, and the implementation of rotational grazing regimes are all tools that can help ranchers to be better environmental stewards. We can regularly help producers to implement riparian projects. Growing Forward 2 programming offers producers the support the need to upgrade current grazing and watering systems, and we are kept busy helping producers fill out their applications. We also have 2 portable watering systems that are available for producers to try out during the summer months in Big Lakes County, which has been a very well-received project.

2015 IN REVIEW

FIELD TRIAL & DEMONSTRATION UPDATE

Local Research for Local Producers



Methods of Statistical Analysis & Reporting

Field Data Analysis

Where necessary, field data were subjected to analysis of variance (ANOVA) using a pre-defined model in Costat procedure (CoStat Version 6.4, 2005). Where ANOVA indicated significant treatment effects, the means were separated by the least significant difference (LSD) at the 0.05 probability level. Significant differences in the text refer to $P<0.05$.

Presentations of Results

The findings from the 2015 field trials and demonstrations and their implications are highlighted in this report. The feed test results are discussed with focus on nutrition quality in relation to "*Beef Ration Rules of Thumb" by* Alberta Agriculture & Forestry, and National Research Council (NRC) nutrient requirements of beef cattle.

Nutrients Required by Beef Cattle

Beef cattle require nutrients to support body maintenance, reproduction, lactation, and growth. The nutritional needs of beef cattle vary by age, class, stage of production, performance level, and weight. The table below shows suggested nutrients requirements for beef cattle. This data can assist producers in determining specific beef cattle nutrient requirements. The values listed in the tables serve as a general guide for matching forage and feeding programs to cattle nutrient needs. Actual nutrient requirements vary depending on many animal and environmental factors.

Nutrient	Growing & Finishing calves	Requirement	Lactating Cows (544 kg)
		Dry Gestating cows (544 kg)	
Protein			
CP, %	12-13	7-9*	11
Macro-minerals			
Ca, %	0.31	0.18	0.42
P, %	0.21	0.16	0.26
Mg, %	0.10	0.12	0.20
K, %	0.60	0.60	0.70
Na, %	0.06-0.08	0.06-0.08	0.10
S, %	0.15	0.15	0.15
Trace-minerals			
Cu, ppm	10	10	10
Zn, ppm	30	30	30
Fe, ppm	50	50	50
Mn, ppm	20	40	40
Energy			
NE_M, MCal kg^{-1}	1.08-2.29	0.97-1.10	1.19-1.28
NE_G, MCal kg^{-1}	0.53-1.37	NA[Y]	NA
TDN, %	65-70[W]	55,60[Z]	65

Suggested nutrients requirements for beef cows from NRC (2000) and AF (2004)

Annual Forage Crop Mixtures for Beef Swath Grazing & Dairy Silage

Collaborator: Barenbrug, USA

By *Akim Omokanye, PCBFA*

In the Peace, swath grazing annual cereal crops continues to be adopted by livestock producers as a method of extending the grazing season. Most producers use swath grazing to feed dry, mature beef cows that are in reasonable body condition. According to the Beef Cattle Research Council, research indicates that swath grazing can reduce total daily feeding cost per cow by 41 to 48%. This is based on a 78% reduction in yardage costs and a 25% reduction in feed costs. Daily feed costs range from $0.61 to $1.80 per cow, largely due to variability in the number of grazing days per acre. In collaboration with Barenbrug USA, PCBFA tested several varieties of annual crops with the objective of evaluating them for forage yield and quality for beef swath grazing and dairy silage. Barenbrug (USA) is an industry-leading plant breeding, seed production, research and marketing company.

Methods

The study site was at Fairview Research Farm (NW5-82-3W6) on RR #35, MD of Fairview. The site used was seeded to alfalfa and had been hayed for more than 10 years. Prior to seeding, soil tests at 0-6" soil depth done at Exova laboratory (Edmonton) showed an organic matter content of 3.0 % and a pH of 6.9. The site was sprayed with Roundup the fall before and worked in the spring before seeding. Thirteen (13) treatments consisting of 1 to 3 crops were arranged in a randomized complete block design in 3 replications in small plots. The check treatments (2) consisted of Gulf annual ryegrass seeded at 25 lb/acre and Tetilla annual ryegrass seeded at 25 lb/acre. Table 1 shows different treatments (crop types, crop mixtures & seeding rates).

Seeding was done on May 25 with a 6-row plot drill at 9 inch row spacing. Fertility according to soil test recommendations for balanced crop nutrition was 200 lb N + 96 lb P + 62 lb K + 75 lb S and applied at seeding. Roundup was used for burn off. In-crop spraying was done with 0.44 L/ha Prestige A + 1.98 L/ha Prestige B on all plots (except for plots that had T-Raptor hybrid rape (treatment 4) and brassica (treatment 6)).

Forage harvest was done on August 10, when Sundre barley was at the soft-dough stage and CDC Baler oats was at the milk stage. At harvest, samples were weighed for fresh weight and sub-samples (about 500 grams per plot) were dried for some days and later reweighed for dry matter (DM) content and DM yield estimation. Forage samples for quality tests were shipped to Rock River Laboratory Inc., Watertown, WI, US.

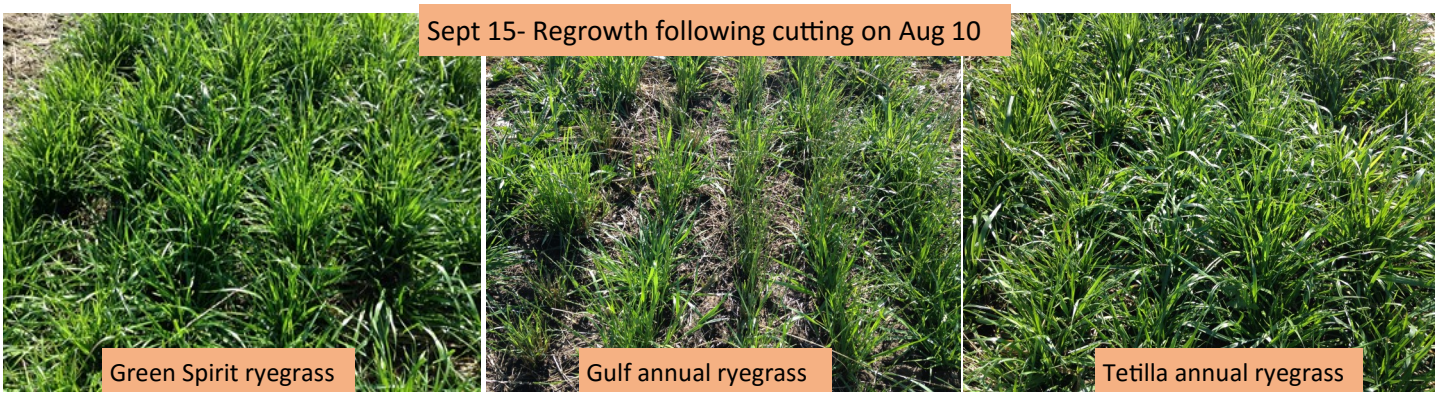
Moisture received from seeding to harvest was 4.57 inches. Fairview was very dry in 2015, and grasshopper infestation was very high.

Results

Forage Yield (Table 1)- The forage DM yield was highest for treatment 4 (7991 lb DM/acre), followed closely by treatment 7 (7923 lb DM/acre) and then treatment 9 (7300 lb DM/acre). Treatments 4, 7 and 9 had significantly higher DM than the 2 checks (treatments 12 & 13) as well as treatment 11. Compared to other treatments, the 2 checks and treatment 11 performed poorly in terms of DM (with <3000 lbs DM/acre).

For swath grazing purpose (treatments 1-6), the study showed that seeding oats with T-Raptor hybrid rape (treatment 4) appeared to favour more DM yield than seeding oats as a monoculture (treatment 1) or seeding oats in a mixture with other crops (treatment 2, 3, 5 & 6). For dairy silage (treatments 7-11), monoculture barley (treatment 7 and 9) and monoculture triticale respectively, appeared to have 1031 and 512 lb more DM than when barley and triticale were mixed with Green Spirit ryegrass (treatments 8 and 10).

Table 1. Moisture content, wet forage yield and forage dry matter yield of mixtures grown in Fairview					
Treatment	**Objective**	**Crop & Seed rate**	**Moisture %**	**Wet forage (lb/ac)**	**Dry matter yield (lb/ac)**
1	Beef	Oats 100 lb/acre	58.2	15360	6426
2	Beef Swathing grazing	Oats 80 lb/acre	59.5	15717	6368
		Green Spirit ryegrass 5 lb/acre			
3	Beef Swathing grazing	Oats 60 lb/acre	61.5	13708	5247
		Green Spirit ryegrass 10 lb/acre			
4	Beef Swathing grazing	Oats 100 lb/acre	59.3	21354	7991
		T-Raptor hybrid Rape 5 lb/acre			
5	Beef Swathing grazing	Oats 100 lb/acre	58.1	18054	6955
		Brassica 5 lb/acre			
6	Beef Swathing grazing	Oats 60 lb/acre	67.9	15092	4835
		Green Spirit ryegrass 10 lb/acre			
		Brassica 5 lb/acre			
7	Dairy Silage	Barley 100 lb/acre	53.8	17146	7923
8	Dairy Silage	Barley 60 lb/acre	54.6	15151	6892
		Green Spirit ryegrass 10 lb/acre			
9	Dairy Silage	Triticale 100 lb/acre	52.5	15360	7300
10	Dairy Silage	Triticale 60 lb/acre	53.2	14615	6788
		Green Spirit ryegrass 10 lb/acre			
11	Dairy Silage	GreenSpirit ryegrass 25 lb/acre	77.8	11847	2628
12	Check	Gulf annual ryegrass 25 lb/acre	67.5	5805	1884
13	Check	Tetilla annual ryegrass 25 lb/acre	75.9	7591	1816
Mean			61.8	14122	5533
$LSD_{0.05}$			8.29	5791	2005
P value/Significance			0.000***	0.005**	0.000***
Coefficient of variation, %			4.2	12.8	11.3



Some Notes on T-Raptor & Green Spirit ryegrass

T-Raptor

T-Raptor is an early maturing hybrid brassica, a cross between a forage turnip and a forage rape, with 50-70 day crop duration.

T-Raptor exhibits a leafy growth habit (higher leaf-to-bulb ratio) and is well-suited to grazing. T-Raptor, a forage brassica is an excellent late-summer feed source, and a good supplement for late summer periods when cool-season forage grasses slow in production.

T-Raptor requires good soil drainage and a pH 5.3 - 7.5. Cold, drought and heat tolerant, these crops commonly provide valuable feed when other crops are less productive.

Forage Brassicas are useful for extending the grazing season when other forages are less productive. Brassicas can provide higher crude protein and digestibility at half the cost of hay or conserved forages. Brassicas have extremely high yield potential when grown on high fertility soils and properly managed. Brassicas can produce as much as 40 tons (wet) per acre.

For more information please visit: http://www.kingsagriseeds.com/blog/wp-content/uploads/2013/07/T-Raptor-Hybrid-Brassica-Kings.pdf

Green Spirit

Green Spirit is a unique blend of diploid and tetraploid Italian ryegrass varieties. Combining tetraploid and diploid varieties maximizes the advantages each has to offer. Tetraploid varieties provide high dry matter production, disease resistance to crown rust and improved palatability. Diploid varieties are added for better persistence under grazing and improved traffic tolerance. These varieties also have improved dry matter production and winter hardiness compared to older cultivars. In regions with moderate climates, Green Spirit will be a biannual forage. Green Spirit is adapted to a wide range of soil conditions – it performs in heavy clay soils and light sandy soils.

Spring Planted Green Spirit Italian ryegrass - High dry matter production, no seed head production, very high forage quality, produces forage until late fall, over-winters and produces forage in the following spring and early summer.

Fall Planted Green Spirit Italian ryegrass - Better winter hardiness, late heading in spring, maintains better forage quality, better regrowth after cutting.

For more information, please visit: http://www.speareseeds.ca/shared/media/editor/file/greenspirit.pdf

Assessment of Soil Rejuvenation, Seed Germination and Foliar Fertilizer Products for Barley Forage and Grain Yield Improvement

By *Akim Omokanye, PCBFA*

For optimal growth, plants need a diversity of nutrients. Enhanced microbial activity in the soil will lead to healthier and more fertile soil. Plants that grow out of the healthier soil tend to have more branching and tillering (with more plant mass), better root systems, better lodging resistance because of superior stems, earlier and/or longer flowering, more heads, higher brix in plants and better quality of grain. Crop nutrients can be provided through different nutrient application methods, including nutrient seed priming and foliar fertilizer application of nutrients. Foliar fertilizer applications produce quick results and are easy to incorporate with traditional spray programs. The Best Farming Systems' Soil Rejuvenation, Seed Germination and Foliar Fertilizer products are custom blend formulations that are respectively applied to soil, seed and plants

Objectives

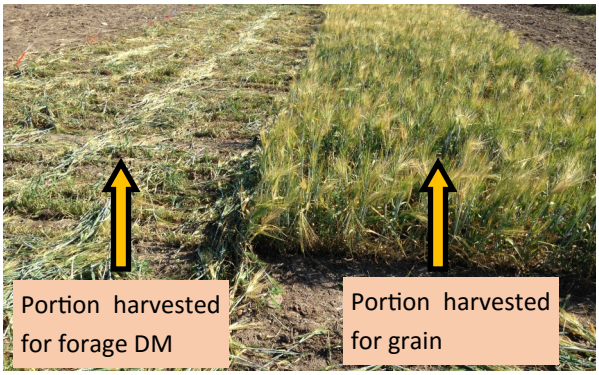
- To test different Best Farming Systems products on barley grain & forage yield, and their quality
- To monitor soil nutrient, quality and microbiological changes
- To examine the cost-benefit ratios of different treatments tested

Methods

A small plot field trial was carried out at Fairview Research Farm (NW5-82-3W6) on RR #35, MD of Fairview in 2015 by Peace Country Beef & Forage Association (PCBFA) in collaboration with Best Farming Systems.

A randomized complete block design (RCBD) with four (4) replications was used in small plots. Eight (8) treatments consisting of the following were studied for their effects on barley grain and forage production and quality:

1. Soil Rejuvenation (SR)
2. Foliar Fertilizer (FF)
3. Seed Germination (SG)
4. SR+FF
5. SR+SG
6. FF+SG
7. All Best Products (1, 2 & 3)
8. Check



Depending on the products, the blends may contain some of the following nutrients: N, P, K, S, Mg, Fe, Cu, Zn, Mo, Mn and B (See Table 1). For more information on Best Farming Systems products, please visit http://www.bestfarmingsystems.com/

Table 1. Guaranteed Minimum Analysis (%) of Best Products used

	N	P	K	S	Mg	Ca
Product		**(P_2O_5)**	**(K_2O)**			
Soil Rejuvenation (SR)	2.0	1.0	-	2.0	0.01	-
Foliar Fertilizer (FF, 5-12-4)	5.0	12.0	4.0	2.0	1.0	-
Seed Germination (SG)	3.0	9.0	1.0	0.11	-	0.01

Sundre barley variety (6-rowed, smooth-awned, hulled feed type) was seeded on May 25 at 25.9 plants/ft^2 (or 114 lb/acre) using a 6-row Fabro plot drill at 9" row spacing. A uniform amount of fertilizer blend (lbs/acre: 200 N + 96 P + 62 K + 75 S) was applied to all plots at seeding (regardless of treatments imposed) following soil test (0-6" depth) recommendation for barley by Exova laboratory.

Application rates, methods and timing:

- SR was sprayed twice: 100 ml/acre sprayed in the burn off and 100 ml/acre sprayed with the in crop spraying of 0.44 L/ha Prestige A + 1.98 L/ha Prestige B.
- SG (pre-seeding seed treatment) was used to treat seed at 150 ml/acre before seeding
- FF was sprayed twice @1.5 L/acre, first at the 3 - 4 leaf stage and again at the soft dough stage.

Measurements - Plant stand was visually inspected in all plots to assess adequacy of crop emergence 4 weeks after seeding. Each plot was examined for plant lodging. Harvesting was done at the soft-dough stage on August 6. About 0.5 kg sub-sample was dried to constant weight for forage dry matter (DM) yield estimation and nutritive analyses. Forage samples were analyzed by Central Testing Laboratory Limited, Winnipeg, using standard methods for wet chemistry. The forage nutritive values (reported on a dry matter basis) were determined using two dry samples per treatment, composites from replications 1 & 3, and replications 2 & 4.

A total of 4.32 inches (109.73 mm) of rain was received from seeding (May 25) to forage harvest (August 6).

Results

Forage Moisture, Yield and Quality

The results showed that forage moisture content at harvest (soft-dough stage) for silage/greenfeed was significantly different for the treatments. The forage moisture content was highest (57.0%) for treatment consisting of a combination of all Best products (SR+FF+SG) and check, while treatment with SG appeared to have the lowest moisture (54.5%, see Table 2). The generally low moisture content for all treatments at the soft-dough stage could be attributed to moisture situation in Fairview in 2015, as the year was very dry.

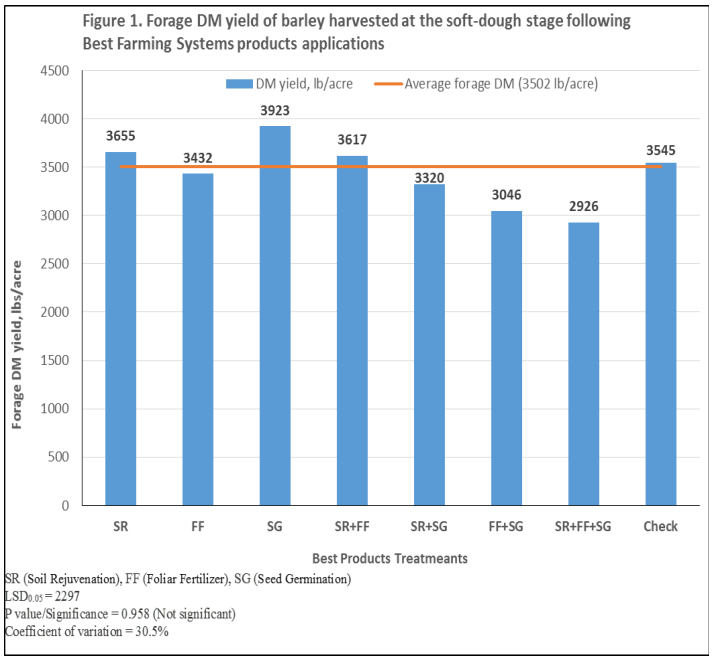
The forage DM yields from all treatments were statistically similar, varying from 2926 lb/acre for SR+FF+SG treatment to 3923 lb/acre for SG treatment (see Figure 1). Only treatments SR, SG and SR+FF appeared to have slight forage DM yield advantage of 72-378 lb DM/acre over check.

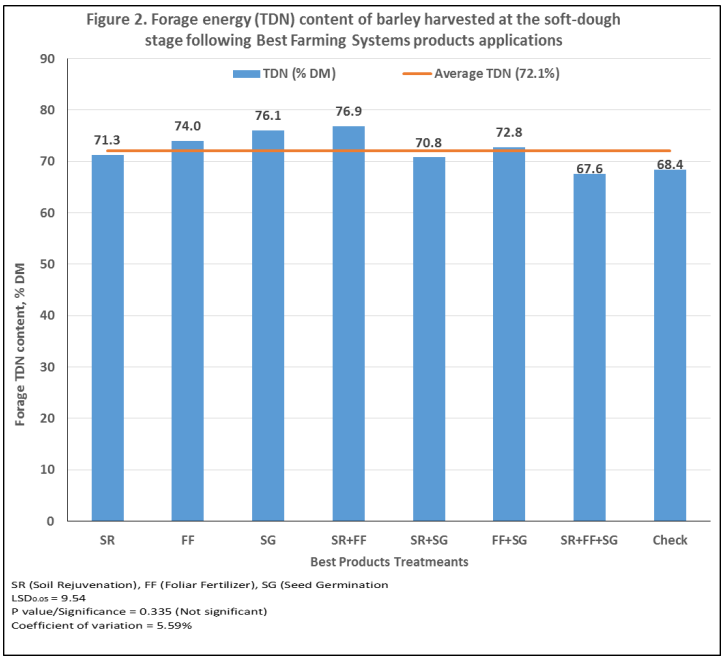
Forage Protein and Macro-mineral Content

The forage protein (CP) content as well as all measured macro-minerals (Ca, P, Mg, K and Na) were statistically similar for all treatments. However, forage CP and P content appeared to be favoured by treatments with Best products (11.8-12.8% CP, 0.18-0.22% P) than treatment without Best product (check, 10.1% CP, 0.14% P) (see Table 2).

Table 2. Forage Moisture, protein and mineral content with and without Best Farming Systems Products (* indicates significant at $P<0.05$; ns indicates not significant at $P<0.05$)

Best Product Treatment	Moisture (%)	CP (%)	Ca (%)	P (%)	Mg (%)	K (%)	Na (%)
Soil Rejuvenation (SR)	56.6	12.8	0.41	0.18	0.25	1.16	0.25
Foliar Fertilizer (FF)	55.6	12.8	0.39	0.19	0.25	1.29	0.13
Seed Germination (SG)	54.5	12.7	0.30	0.19	0.20	1.45	0.10
SR+FF	55.7	12.6	0.39	0.22	0.25	1.11	0.11
SR+SG	56.9	11.8	0.43	0.19	0.27	1.15	0.18
FF+SG	55.0	12.3	0.43	0.20	0.23	1.53	0.06
SR+FF+SG	57.0	12.2	0.53	0.18	0.27	1.33	0.20
Check (Control)	57.0	10.1	0.40	0.14	0.26	1.30	0.22
Mean	55.7	12.2	0.41	0.18	0.25	1.29	0.16
$LSD_{0.05}$	*1.75*	3.47	0.19	0.07	0.07	0.86	0.14
P value/Significance	*0.017**	0.649^{ns}	0.416^{ns}	0.331^{ns}	0.451^{ns}	0.920^{ns}	0.132^{ns}
Coefficient of variation, %	1.83	12.1	19.8	15.7	12.1	28.3	38.2





Forage Detergent Fiber and Energy

The forage acid detergent fiber (ADF) content was statistically similar for all treatments, varying from 20.4% ADF for SR+FF to 29.1% ADF for SR+FF+SG (Table 3). The forage energy (TDN) content was statistically similar for all treatments. However, the application of Best Products (except for SR+FF+SG treatment) appeared to increase forage TDN (2.4-8.5%) than check (see Figure 2). The results also showed that all treatments were similar with respect to other forms of energy measured (Table 3).

Table 3. Forage acid detergent fiber (ADF) and other forms of energy with and without Best Products

(*ME- metabolizable energy, NE_G- net energy for gain, NE_L- net energy for lactation, NE_M-net energy for milk, DE- digestible energy, ns indicates not significant at P<0.05)*

Best Product Treatment	ADF (%)	ME (Mcal/kg)	NE_G (Mcal/kg)	NE_L (Mcal/kg)	NE_M (Mcal/kg)	DE (Mcal/kg)
Soil Rejuvenation (SR)	25.7	2.61	1.08	1.63	1.70	3.14
Foliar Fertilizer (FF)	23.1	2.71	1.16	1.70	1.79	3.26
Seed Germination (SG)	21.2	2.79	1.22	1.75	1.86	3.36
SR+FF	20.4	2.82	1.24	1.77	1.88	3.39
SR+SG	26.1	2.59	1.07	1.62	1.69	3.12
FF+SG	24.2	2.67	1.13	1.67	1.75	3.21
SR+FF+SG	29.1	2.48	0.98	1.54	1.59	2.98
Check (Control)	28.4	2.51	1.01	1.56	1.61	3.02
Mean	*24.7*	*2.64*	*1.11*	*1.65*	*1.73*	*3.18*
$LSD_{0.05}$	*8.93*	*0.35*	*0.27*	*0.24*	*0.31*	*0.42*
P value/Significance	*0.335^{ns}*	*0.344^{ns}*	*0.339^{ns}*	*0.345^{ns}*	*0.345^{ns}*	*0.331^{ns}*
Coefficient of variation, %	*15.3*	*5.61*	*10.2*	*6.03*	*7.46*	*5.56*

Grain yield and A component of grain yield (Table 4)

Seed weight - The combination of SR +FF+SG (treatment 7) significantly improved seed weight (58.1 g/1000-kernels) over other treatments as well as the check. The check had similar seed weight to treatments 2, 3, 4 & 6.

Grain Yield - Grain yield was significantly highest for the combination of SR+ FF (treatment 4, 58.0 bushels/acre), followed by a combination of SR +FF +SG (53.1 bushels/acre). Other treatments had <50 bushels/acre.

Table 4. Grain yield and 1000-kernel weight of barley with or without Best products		
	1000-kernel weight (g)	Grain yield (bushel/acre)
Soil Rejuvenation (SR)	52.0	47.9
Foliar Fertilizer (FF)	50.7	48.2
Seed Germination (SG)	51.5	40.1
SR+FF	50.6	58.0
SR+SG	53.0	34.7
FF+SG	51.5	32.7
SR+FF+SG	58.1	53.1
Check (Control)	50.0	45.5
Mean	52.2	45.0
$LSD_{0.05}$	1.5	1.3

Some Implications of Results Obtained

Fairview was dry in 2015, with a total rainfall of 4.32 inches (only 3.08 inches from May 25 to August 2) received by the seeded barley crop before harvest for forage. The generally low DM yield obtained and the lack of significant differences in DM yields between treatments tested was a reflection of the dry year. Of the treatments imposed on barley for improved forage yield and quality, Seed Germination in particular appeared to have favoured higher forage DM by just 378 lbs/acre over the check.

In terms of forage quality, though no statistical differences were found for forage nutritive values, but the forage CP, P, ADP & TDN content all appeared to be slightly improved by individual Best products as well as their combinations. The forage CP content from all treatments was adequate for a mature beef cow (except for check which fell short of the 11% CP needed by a mature lactating/nursing cow). The slight increases or benefits obtained for forage CP (%N x 6.25) and the P content for treatments consisting of one or more best products over check, could be attributed to the additional N (2-5%) and P (1-12%) contained in the Best products used (see Table 1).

The forage ADF is a strong predictor of forage quality. The ADF values are important because they relate to the ability of an animal to digest the forage. As ADF increases, digestibility of forage usually decreases. Lower ADF values are better and preferred. Considering that as ADF increases, digestibility of forage usually decreases, it will be sufficed to say that when the forage from all treatments are presented side by side to cows in a preference study SR + FF treatment forage would probably be the most consumed by cows because of its low ADF value (20.4%).

Conclusion - In the present study, a combination of SR + FF appeared to have improved forage quality (particularly CP, P, ADF, TDN and all other forms of energy) and grain yield compared to other treatments including the check. The combination of SR+FF+SG also seemed to have improved seed weight as well as grain yield over most treatments.

Rejuvenation of Perennial Forage Stands with Soil Rejuvenation and Foliar Fertilizer

Collaborator: Lawrence Andruchiw

By *Akim Omokanye, PCBFA*

Under the right conditions, fertilizer application can be one of the most cost-effective methods to improve old forage stand yield and quality. In addition to dry fertilizer application, foliar fertilizer can also be used to rejuvenate old perennial forage stands. Foliar fertilization can correct deficiencies, strengthen weak or damaged crops, speed growth and grow better plants. This does not mean that foliar fertilizers replace solid fertilizer, but the use of foliar fertilizer has been shown to increase the availability of the applied major elements, that have been applied in solid/dry form. The present study examined two Best Farming Systems products (Soil Rejuvenation and Foliar Fertilizer) in improving hay field production.

Methods

The study was carried out at Double LA Farms (Lawrence & Lori Andruchiw) in the Happy Valley area (RGD Road 75, SW-05-78-07-W6), near Spirit River, Alberta by Peace Country Beef & Forage Association (PCBFA) in collaboration with Best Farming Systems and Double LA farms. An old hay field consisting of an alfalfa-grass mixture was used. Rainfall received from May 1 to July 30 in Spirit River was 6.33 inches (160.7 mm).

A randomized complete block design (RCBD) with three (3) replications was used. Four (4) treatments consisting of the following were studied for their effects on forage production and quality:

1. Soil Rejuvenation (SR, 3 acres)- SR treatment was sprayed 2 twice (at the rate of 100 ml/acre on June 13 and again on July 4)
2. Foliar Fertilizer (FF, 3 acres)- FF was sprayed twice at the rate of 1.5 L/acre, on June 13 and July 4
3. SR+FF (3 acres)- SR at 100 ml/ac + FF at 1.5 L/acre were mixed and sprayed twice, on June 13 and July 4
4. Check (no Best products applied)

Depending on the Best Farming Systems' products, the blends may contain some or all of the following nutrients: N, P, K, S, Mg, Fe, Cu, Zn, Mo, Mn, and B (See Table 1).

Table 1. Guaranteed Minimum Analysis (%) of Best Products

	N	P	K	S	Mg
Product		**(P_2O_5)**	**(K_2O**		
Soil Rejuvenation (SR)	2	1		2	0.01
Foliar Fertilizer (FF, 3-14-3)	3	14	3	2	1

Soil Rejuvenation is a custom blended formulation that is applied to the soil and to the plants. It helps to stimulate and activate the bacteria in the soil which are the main organisms involved in fertilizer conversion. The bacteria help to convert the man made fertilizers into plant available nutrients and also help to unlock the nutrients that are already in the soil, but not necessarily plant available.

Foliar Fertilizer is a custom blend of nutrients consisting of NPK and micronutrients for in-crop application, which are developed to meet the crop nutrient requirements during its growth. Foliar Fertilizers helps plants to absorb the required nutrients through the leaves when the products are sprayed as foliar. For more information on Best Farming Systems products, please visit http://www.bestfarmingsystems.com/

Measurements - Harvest for forage yield and quality was done on July 30. Composite forage samples were sent to Central Testing Laboratory Ltd., Winnipeg, for forage quality analysis using NIR.

Results

Forage Moisture and Yield

The forage moisture content at harvest appeared to be lower for check (49.6%) than other treatments (Table 2). SR treatment had the highest forage moisture at harvest (57.2%), followed by FF (55.8%) and then SR+FF (52.4%).

The forage dry matter (DM) yield was statistically similar for all treatments. However, a combination of SR + FF treatments as well as FF treatment had 436-795 lbs/acre more DM than check (Figure 1).

Forage Quality

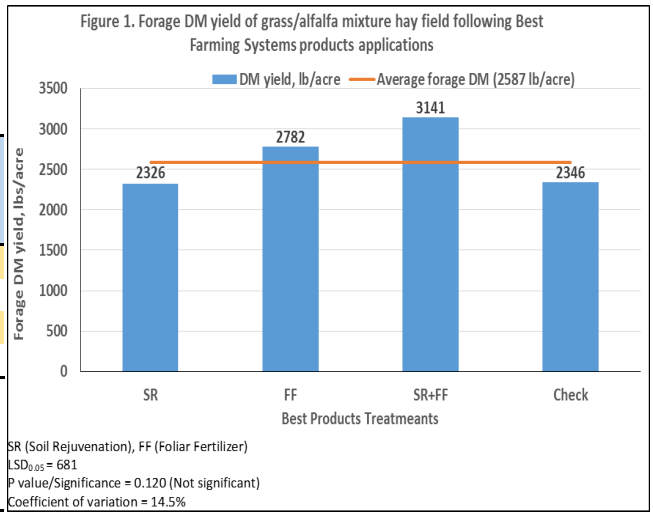
The forage protein (CP) content was significantly different between treatments, but the check for some reason had higher CP than other treatments.

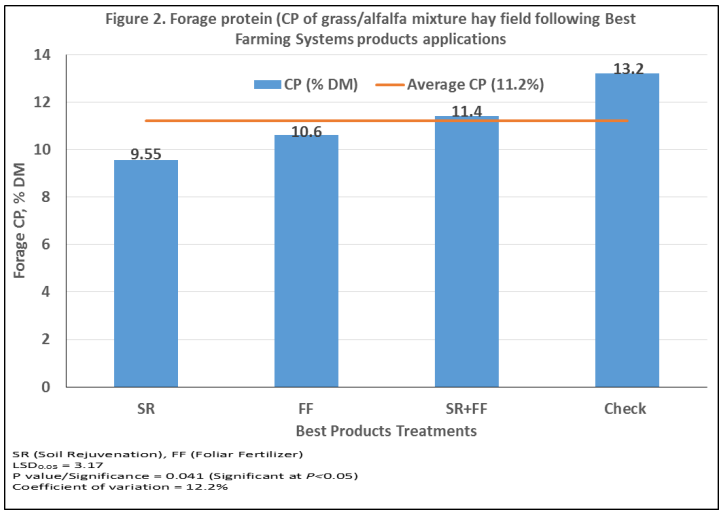
For the forage macro-minerals analyzed for (Ca, P, Mg, K and Na - see Table 2), the forage Ca, K and Na were significantly affected by treatments applied and Best products used seemed to have some positive effects. Treatment combination of SR+FF appeared to favour forage Ca over other treatments. When compared to the check, forage K was improved by the applications of SR and FF as well as the combination of SR+FF. Forage Na was far higher for check than other treatments. Forage P and Mg content were similar for all treatments.

The forage detergent fiber (ADF & NDF, Table 3), energy (TDN, Figure 3) and other forms of energy measured (Table 3) were not statistically different between treatments.

Table 2. Forage Moisture & mineral content with & without Best Farming Systems Products (* indicates significant at $P<0.05$; *** indicates significant at $P<0.001$, ns indicates not significant at $P<0.05$, CV means coefficient of variation)

Best Product Treatment	Moisture (%)	Ca (%)	P (%)	Mg (%)	K (%)	Na (%)
SR	57.2	0.78	0.14	0.23	1.52	0.03
FF	55.8	1.09	0.13	0.29	1.49	0.03
SR+FF	52.4	1.16	0.15	0.29	1.52	0.02
Check	49.6	0.96	0.16	0.26	1.21	0.11
Mean	*53.8*	*1.00*	*0.15*	*0.27*	*1.44*	*0.05*
$LSD_{0.05}$	*4.84*	*0.39*	*0.06*	*0.14*	*0.19*	*0.01*
P value	*0.04^{*}*	*0.04^{*}*	*0.42^{ns}*	*0.51^{ns}*	*0.04^{*}*	*0.00^{***}*
CV, %	*5.01*	*17.6*	*18.4*	*21.1*	*5.22*	*9.96*





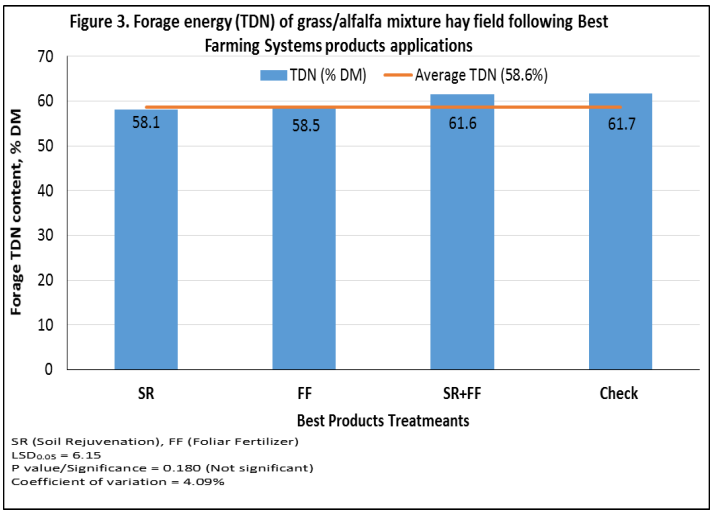


Table 3. Forage acid detergent fiber and other forms of energy with and without Best Products
(*ME- metabolizable energy, NE_G- net energy for gain, NE_L- net energy for lactation, NE_M-net energy for milk, DE- digestible energy, ns indicates not significant at P<0.05)*

Best Product Treatment	ADF (%)	NDF (%)	ME (Mcal/kg)	NEG (Mcal/kg)	NEL (Mcal/kg)	NEM (Mcal/kg)	DE (Mcal/kg)
SR	38.0	59.0	2.13	0.70	1.31	1.27	2.57
FF	37.6	57.5	2.14	0.72	1.32	1.28	2.58
SR+FF	34.7	52.6	2.26	0.81	1.40	1.39	2.72
Check (Control)	34.6	51.4	2.26	0.81	1.40	1.40	2.72
Mean	*36.2*	*55.1*	*2.20*	*0.76*	*1.36*	*1.34*	*2.65*
LSD0.05	*5.76*	*8.34*	*0.22*	*0.18*	*0.15*	*0.20*	*0.27*
P value/Significance	*0.179^{ns}*	*0.087^{ns}*	*0.152^{ns}*	*0.151^{ns}*	*0.161^{ns}*	*0.153^{ns}*	*0.166^{ns}*
Coefficient of variation, %	*5.98*	*5.67*	*3.93*	*9.81*	*4.27*	*6.17*	*4.00*

In summary, the lack of any significant improvement in forage DM and forage quality following the different treatments imposed is difficult to explain. But looking at the generally low DM in this study (mean of 2587 lbs DM/acre), which is less than 2 bales per acre at an experimental level, dry weather at the site as with most parts of the Peace River region in 2015 was thought to have reduced the biological benefits of the treatments imposed on forage production and quality.

But in a previous on-farm study on pastures by PCBFA, forage DM yields of 424 lbs/acre (from FF) to 1639 lbs/acre (from SR+FF) over control have been reported. The study also showed some benefits of sole SR and FF applications as well as the combination of both SR and FF over check in terms of CP, P, K, ADF, NDF, TDN and relative feed value. The study also indicated that after the first spraying of SR, FF and SR+FF, cows were allowed to graze the sprayed plots a few weeks later. The observation was that cows had heavily grazed plots sprayed with a combination of BFF + BSR than other plots. This indicated that cows probably preferred treatment consisting of SR+FF to other treatments. And FF was slightly grazed more than SR or the control. The greater consumption of the preferred treatments could be related to better forage quality (particularly lower values of both ADF and NDF) and brix levels for treatments BFF + BSR and BFF than either BSR or control check. For the full report please visit http://www.bestfarmingsystems.com/data/internal/article002.asp

Sainfoin – Alfalfa Mixture Trial

Collaborators: Dr. Surya Acharya, Agriculture and Agri-Food Canada, Lethbridge
By *Akim Omokanye, PCBFA*

Sainfoin is a perennial forage legume that does not cause bloat and is immune to attack by the alfalfa weevil. Established sainfoin plants grow rapidly early in the season and appear to make good use of available moisture during this period. Sainfoin grows upright, making it easy to harvest as hay. It also has excellent leaf retention. Sainfoin is best suited to a rotational grazing system. It can be grazed mid-summer or stockpiled and grazed in the fall. However, old sainfoin cultivars do not persist in alfalfa stands for long and in new mixed stands do not regrow at the same rate as alfalfa after cutting or grazing. Recent studies conducted in Alberta and Saskatchewan by AAFC researchers have looked at the potential of including new sainfoin varieties in alfalfa pastures for grazing. They found that these new varieties are more competitive and have improved regrowth rates compared to some older varieties, and that including 20-30% sainfoin in an alfalfa pasture significantly lowers, and in certain cases eliminates, the risk of bloat. PCBFA seeded some experimental Sainfoin lines in mixtures with AC Grazeland alfalfa variety to evaluate their adaptation, growth, persistency, forage yield and quality in parts of Alberta. This will help us determine if these new sainfoin lines developed for their ability to survive with alfalfa can outperform the old cultivars in Western Canada.

Methods

The project was seeded in May 2013 at Fairview Research Farm (NW5-82-3W6) on RR #35. Soil tests prior to seeding showed a pH of 5.4 and 8.8% organic matter. Suggested seeding rate was: sainfoin 30 lb/ac, alfalfa 12 lb/ac. As these were seeded in the same row mixtures, we seeded at ½ rate; sainfoin at 15 lb/ac and alfalfa at 6 lb/ac. Seeding was 0.5-0.7" deep, and the seed was inoculated. Small plots measuring 1.4 m x 8.5 m were used. Fertility according to soil tests was 40 lb/acre of 11-52-0. Assure II and Basagran Forte were used to control volunteer oats and canola and other broad leaf weeds in 2013.

The forages were arranged in a randomized complete block design with four replications. Three experimental sainfoin lines designated LRC05-3900, LRC05-3901, LRC05-3902, and Nova (check) were seeded in the same row with AC Grazeland alfalfa. Cutting was supposed to be done twice, first cut when sainfoin is at 40-50 % bloom (alfalfa was at 20-30% bloom), and the second cut at 6 weeks after the first cut. This year, only one cut was possible because deer had selectively grazed down all sainfoin stands in the mixtures just before the second cut was to be taken. The regrowth was again grazed by deer.

Field measurements taken are dry matter yield (DM) and percent composition of sainfoin and alfalfa in the mixtures.

Results

Total Forage Dry Matter (Table 1)

The total DM of the first cut was statistically similar for all mixtures. The total DM for first cut varied from 3417 lb/acre for Nova sainfoin/alfalfa mixture to 4971 lb/acre for LRC05-3900 sainfoin/alfalfa mixture. 2015 was dry, but the spring moisture played a significant role in the forage DM obtained for first cut.

Proportion of Sainfoin and Alfalfa (Table 2)

The proportion of Sainfoin in the sainfoin/alfalfa mixtures for the first cut (the only cut) in 2015 was highest for LRC05-3902 Sainfoin (41.4%), followed by LRC05-3901 Sainfoin (37.5%), LRC05-3900 Sainfoin (26.4%) and then Nova sainfoin (18.1%). The proportion of AC Grazeland alfalfa in the sainfoin/alfalfa mixtures was consistently higher for Nova sainfoin/alfalfa mixture (81.9%). Other mixtures had 58.7 to 73.6% AC Grazeland alfalfa in the mixtures.

Table 1. Total DM yields from first cut in 2015	
Sainfoin/Alfalfa Mixture	**First Cut (lbs/acre)**
LRC05-3900 Sainfoin + AC Grazeland alfalfa	4971
LRC05-3901 Sainfoin + AC Grazeland alfalfa	4180
LRC05-3902 Sainfoin + AC Grazeland alfalfa	4563
Nova Sainfoin + AC Grazeland alfalfa (check)	3417
Mean	*4283*
$LSD_{0.05}$	*1430*
P value/Significance	*0.157 ns*
Coefficient of variation, %	*20.8*

Sainfoin-Alfalfa same row mixture –June 9, 2015

Table 2. Proportion of sainfoin and alfalfa in the mixtures from first in 2015		
Sainfoin/Alfalfa Mixture	**Forage variety**	**First Cut (%)**
LRC05-3900 Sainfoin + AC Grazeland alfalfa	LRC05-3900 Sainfoin	26.4
	AC Grazeland alfalfa	73.6
LRC05-3901 Sainfoin + AC Grazeland alfalfa	LRC05-3901 Sainfoin	37.5
	AC Grazeland alfalfa	62.5
LRC05-3902 Sainfoin + AC Grazeland alfalfa	LRC05-3902 Sainfoin	41.4
	AC Grazeland alfalfa	58.7
Nova Sainfoin + AC Grazeland alfalfa (check)	Nova Sainfoin	18.1
	AC Grazeland alfalfa	81.9

Summary - The results obtained so far here have shown that the old sainfoin variety used here known as Nova sainfoin may not be good competitor with alfalfa when seeded together in the same row mixture compared to new lines. As indicated earlier, studies in Alberta and Saskatchewan have shown that including 20-30% sainfoin in an alfalfa pasture significantly lowers, and in certain cases eliminates, the risk of bloat. So, in the present study here at the Fairview Research Farm, Nova sainfoin, which contained <20% in mixture with alfalfa may not have the potential to lower bloat when seeded with alfalfa in the same row mixture within a few year after seeding. One (LRC05-3902 Sainfoin) of the 3 experimental sainfoin lines used in this study has recently been registered as Mountainview sainfoin.

For more information on Sainfoin, and Sainfoin/Alfalfa mixtures, please visit the following sites:

New sainfoin for safer alfalfa grazing by Dr. Reynold Bergen
http://www.beefresearch.ca/blog/sainfoin/

http://www1.agric.gov.ab.ca/$department/newslett.nsf/all/agnw21219

http://www.meristem.com/feature_articles/2013/fa_2013_03.php

http://www.producer.com/2013/07/sainfoin-trial-results-puzzling/

PCBFA Annual Reports 2013 & 2014
http://peacecountrybeef.ca/

Sainfoin field in Southern Alberta- July 2013

On-farm Demonstration of Annual Cocktail Mixtures for Beef Cattle

Collaborating Producer: Thomas & Laura Claydon (MD of Smoky River)

By *Akim Omokanye, PCBFA*

Cover crops are an important tool that farmers can use to generate benefits and services on the farm and for society, including improved soil health, nutrient supply to cash crops, weed suppression, insect pest management, forage production, pollinator resources, and clean water and air. There are many different cover crop species to choose from, and each cover crop species has different abilities to provide the services described above. Cocktail cover cropping involves using complex mixtures of cover crop seeds, which can be up to 5, 7, 8 or even 15 or 20 varieties of seed in a single mix - to achieve multiple soil-health, production and profit goals, usually in no-till farming systems.

Methods

The demonstration site was at Thomas & Laura Claydon's farm, MD of Smoky River. Demonstration strip design was used on a 5-acre piece of land. The soil analysis (0-6" soil depth) done by Exova Laboratory, Edmonton prior to seeding this year showed a pH of 6.2 and an OM of 7.65%. The analysis also showed that the soil was deficient in N and P. The land was hayland prior to 2014. The land was disced in spring of 2014 and 2015. The collaborating producer (Thomas) seeded crop mixes containing 2-8 crop species against a single species oat crop (please see Table 1 below).

Seeding was done with a Melroe double disc press drill (14-ft wide) at 6" row spacing on June 7 into dry soil at approximately 3/4 inch depth. No fertilizer was applied.

As with most parts of the Peace in 2015, the site was also very dry, so no forage yield was determined, but forage samples were taken from the plots using 5 randomly placed 0.25 m x 0.25 m quadrats/plot when barley was at the soft dough stage. Composite forage samples were taken per treatment, dried and later shipped to Central Testing Laboratory Ltd., Winnipeg, Manitoba for feed quality analysis using standard laboratory procedures for wet chemistry.

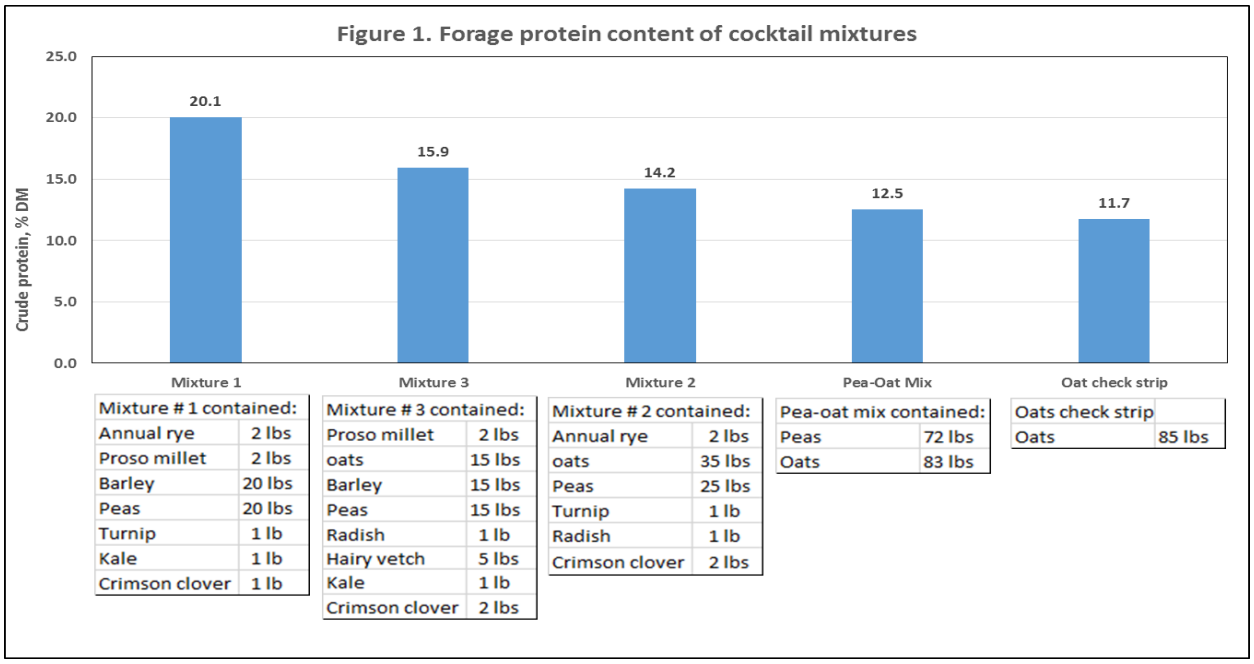
Table 1. Cover crop cocktail mixtures and their seeding rates (lbs/acre)

Cocktail mixture 1	Cocktail mixture 2	Cocktail mixture 3	Cocktail mixture 4	Oats check strip
Annual rye 2 lbs	Annual rye 2 lbs	Proso millet 2 lbs	Peas 72 lbs	Monoculture Oats - 85 lbs
Proso millet 2 lbs	Oats 35 lbs	Oats 15 lbs	Oats 83 lbs	
Barley 20 lbs	Peas 25 lbs	Barley 15 lbs		
Peas 20 lbs	Turnip 1 lb	Peas 15 lbs		
Turnip 1 lb	Tillage Radish 1 lb	Tillage radish 1 lb		
Kale 1 lb	Crimson clover 2 lbs	Hairy vetch 5 lbs		
Crimson clover 1 lb		Kale 1 lb		
		Crimson Clover 2 lbs		

Results

Forage Quality

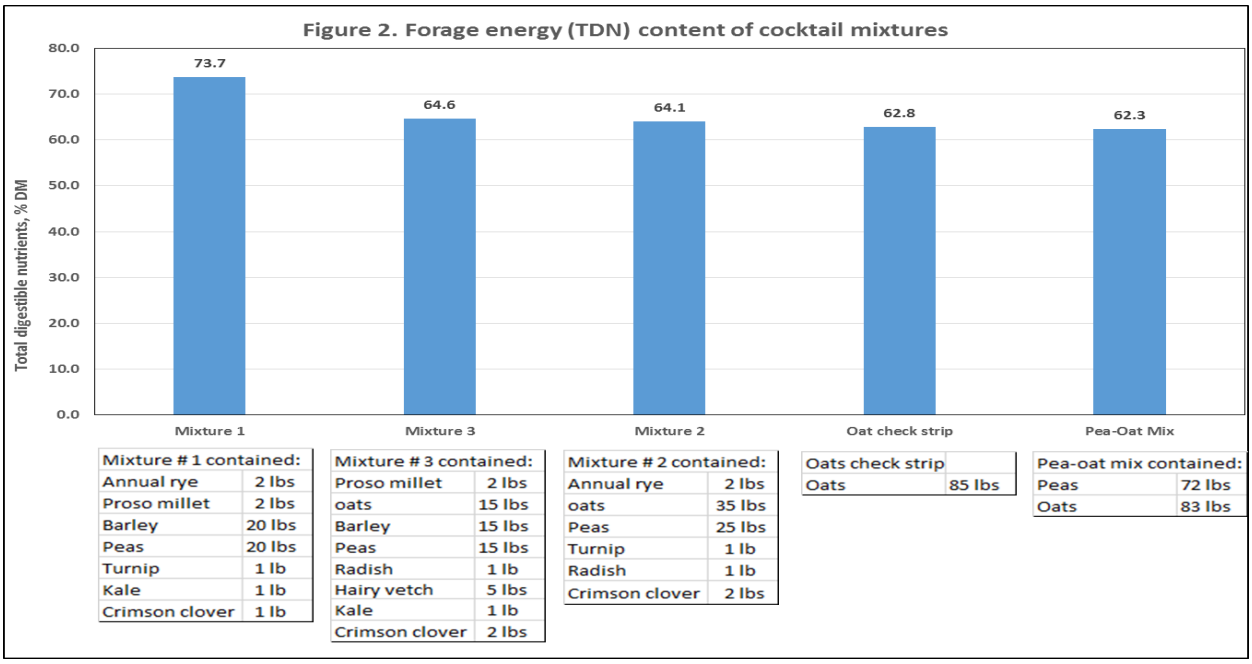
Protein Content (Figure 1) - The forage crude protein (CP) content appeared to be generally higher for all mixtures compared to the oats check strip. Protein was highest for Mixture 1 (20% CP), followed by Mixture 3 (16% CP), Mixture 2 (14% CP), Mixture 4 (Pea-oat mix, 13% CP) and then Oats check strip (12% CP). It is evident from this study that cocktail mixtures containing more than 2 crops in the mixtures improved forage CP content compared to oats check strip and a mixture of pea-oat mix. Looking at the mixtures, it appears that mixtures which had kale and proso millet included in the mix (Mixtures 1 and 3) improved the forage CP over those mixtures which did not include Kale and proso millet.



Generally, the CP obtained for all mixtures as well as oats check strip met the protein requirements of a mature beef cow, that requires 7% CP and 9 % CP at the mid gestation stage and 11% CP after calving. For growing and finishing calves that require 12-13% CP, Mixtures 1, 2 and 3 far exceeded the protein required by these categories of calves.

Forage Energy Content (Figure 2)

The forage energy (total digestible content, TDN) was generally above 60% for all mixtures. Mixture 1 had the highest TDN (74%). A mature beef cow requires 55% TDN at the mid-pregnancy stage, 60% TDN at late-pregnancy stage and 65% TDN after calving. Looking at Figure 2, all mixtures as well as oats check strip were able to meet the energy requirements a dry gestating cow. But for a nursing, that requires 65% TDN, only Mixture 1 exceeded this requirement. Others either just barely met or slightly fell short of meeting the energy requirement of a nursing cow. Also, Mixture 1 exceeded the energy requirements of growing and finishing calves, that require 65-70% TDN.



Minerals (Table 2)
Forage Ca content varied form 0.26 to 0.95%. Only Mixture 2 fell below the Ca requirements of a mature beef cow, which needs 0.18% Ca during pregnancy and 0.42% Ca after calving.

Both Mixture 4 and the oats check strip fell short of meeting the 0.16% P requirements of a dry gestating cow. None of the mixtures and check strip had sufficient P amount needed by a lactating cow.

All the Mg, K and Na requirements of a dry gestating cow as well as a lactating cow have been met by all mixtures and oat check strips, except for Mixture 2, which fell short of 0.20% Mg and 0.10% Na that are needed by a lactating cow. Looking at Table 2, Mixture 2 appeared to have lower Ca, Mg, K and Na values than Mixtures 1 and 3.

Table 2. Some macro-minerals, acid detergent fiber and other forms of energy measured of cocktail mixtures

Cocktail mixture	Ca %	P %	Mg %	K %	Na %	ADF %	ME Mcal/kg	NE_G Mcal/kg	NE_L Mcal/kg	NE_M Mcal/kg	DE Mcal/kg
Mixture 1	0.94	0.19	0.52	2.52	0.58	23.3	2.70	1.16	1.69	1.78	3.25
Mixture 2	0.26	0.22	0.16	2.12	0.07	32.3	2.35	0.88	1.45	1.47	2.83
Mixture 3	0.95	0.22	0.34	2.27	0.26	31.8	2.37	0.90	1.47	1.49	2.85
Pea-Oat Mix	0.58	0.15	0.26	1.09	0.22	34.0	2.28	0.83	1.41	1.41	2.75
Oat check strip	0.62	0.14	0.36	1.57	0.29	33.5	2.30	0.84	1.42	1.43	2.77

ME - metabolizable energy, NE_G – net energy for gain, NE_L – net energy for lactation, NE_M - net energy for maintenance
DE – digestible energy

Acid Detergent Fiber (ADF) (Table 2)
The forage ADF content was in order of oat check strip > Mixture 4 (Pea-oat Mix) > Mixture 2 > Mixture 3 > Mixture 1. The lower ADF obtained for Mixture 1 compared to other mixtures is an indication of its feed value. Considering that as ADF increases, digestibility of forage usually decreases, it will be sufficed to say that when all the mixtures as well as oats check strip are presented side by side to cows in a preference study, Mixture 1 would likely be preferred and consumed more than others because of its lower ADF value.

Other Forms of Energy (Table 2)
Mixture 1 consistently had higher other forms of energy listed in Table 2 (ME, NE_G, NE_L, NE_M & DE) than other mixtures and oats check. Looking at the ME values in the present study, all treatments were well within the suggested daily ME requirements of 2.23 to 2.54 Mcal/kg of mature beef cattle. A mature beef cow requires 0.97-1.10 Mcal/kg of NE_M at the dry gestation stage and 1.19-1.28 Mcal/kg NE_M during lactation. All mixtures as well as oat check strip met the NE_M requirement of a mature beef cow. For growing and finishing calves, that require 0.53-1.37 Mcal/kg of NE_G, all mixtures as well as oat check strip were well within this range.

Conclusion - Though no forage DM yield is available in the present study, from the available forage quality information, Mixture 1 appeared to provide high forage quality for beef cattle taking into consideration the forage CP, TDN, Mg, K, Na, ADF and all other forms measured energy. Next to Mixture 1 in terms of forage quality for beef cattle is Mixture 3. Mixtures 1, 2 & 3 were only frequently able to meet the nutrients requirements of a dry gestating cow.

Forage Quality of Monoculture Cover Crops Tested in Fairview

By *Akim Omokanye, PCBFA*

Usually we think of cover crops in terms of reducing soil erosion and adding organic matter to the soil – but they can do much more. Cover crops add organic matter but the amount really varies depending upon the cover crop species and the conditions under which it is grown. Some cover crops fix nitrogen thereby improving soil fertility but many more require nitrogen to grow. Some cover crop species may be a non-host for a pest or may release materials that are toxic to the targeted pest. Cover crops can help to reduce compaction and improve soil structure. The addition of the plant top and, especially root matter, helps to improve water infiltration and holding capacity. It can also decrease soil bulk density. Deep rooted cover crops can help to decrease the impact of soil compaction.

Methods

Eight cover crops were seeded in small plots in two replications at Fairview Research Farm (NW5-82-3W6) on RR #35. The site used was seeded to alfalfa and had been hayed for more than 10 years. Prior to seeding, soil tests at 0-6" soil depth done at Exova Laboratory (Edmonton) showed an OM of 3.0 % and a pH of 6.9. The site was sprayed with Roundup the fall before and worked in the spring before seeding.

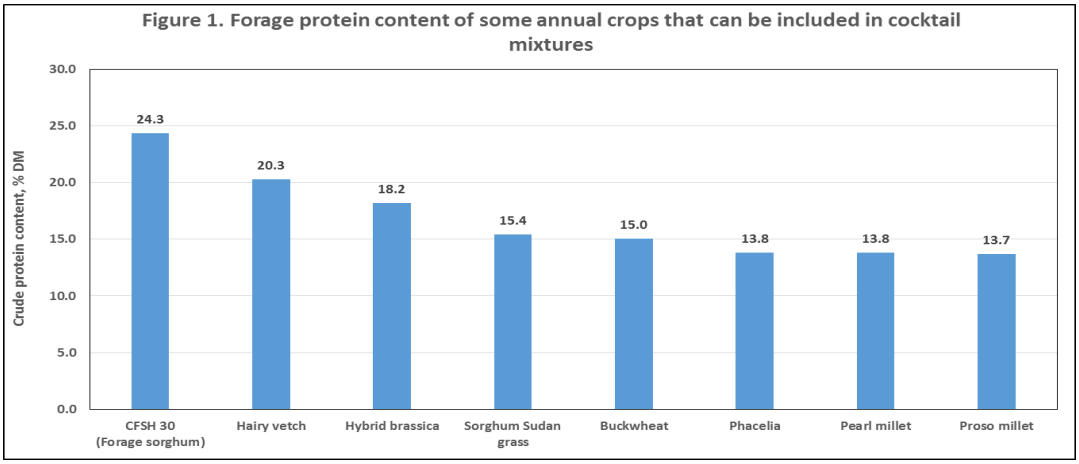
The crops were seeded on May 25 at the following rates: Red Proso millet - 22.0 lbs/acre, Pearl millet - 22.0, Forage sorghum (Canadian Forage Sorghum Hybrid 30, CFSH 30) - 22.0 lbs/acre, Sorghum Sudan grass - 22.0 lbs/acre, Hairy vetch - 17.5 lbs/acre, Phacelia - 4.5 lbs/acre, Buckwheat - 25 lbs/acre and Hybrid brassica - 3.2 lbs/acre. The cereals (proso millet, CFSH 30, Sudan grass and pearl millet) were sprayed with 2,4-D Ester 700 at the recommended rate and plant growth stages. Other crops were not sprayed.

All crops were harvested on August 15 and samples taken for forage quality analysis. Red proso millet was harvested at the mid-dough stage and pearl millet was at 50% flowering stage. Both CFSH 30 and sorghum Sudan grass did not flower at all, so they were both harvested at the late vegetative stage (pre-boot stage). Hairy vetch was harvested at the early-pod stage. Composite forage samples were taken per crop, dried and later shipped to Central Testing Laboratory Ltd., Winnipeg, Manitoba for feed quality analysis using standard laboratory procedures for wet chemistry.

Results

Protein: The forage crude protein (CP) content was generally above 13% for all crops. The CP content was highest for CFSH 30 (24% CP) , followed by hairy vetch (20% CP) and then hybrid brassica (18 % CP). All cover crop species tested here met the CP requirements of growing and finishing calves that require 12-13% CP as well as that of a mature beef cow, which requires 7-11% CP depending on its physiological state.

Figure 1. Forage protein content of some annual crops that can be included in cocktail mixtures



Forage Minerals (Table 1): Phacelia had the highest forage Ca content (2.98%), followed by hybrid brassica (2.33%), buckwheat (1.59%) and then hairy vetch (1.49%). The four cereal crops (proso millet, CFSH 30, Sudan grass and pearl millet) all had far less forage Ca content (0.29-0.70% Ca) than other crops. But all crops tested here far exceeded the Ca requirements of 0.31% Ca by growing and finishing calves, 0.18% Ca by a dry gestating cow and 0.42% Ca by a lactating cow.

The forage P varied from 0.17% for proso millet to 0.33% for hybrid brassica. Except for proso millet, all crops had adequate levels of P for growing and finishing calves (0.21%) and a dry gestating cow (0.16% P). But only hybrid brassica was able to meet the level of P needed by a lactating cow (0.26% P).

All crops tested here far exceeded the requirements of Mg and K by both young and mature beef cattle. Of the 8 crops tested here, only hybrid brassica had sufficient Na for both young and mature beef cattle.

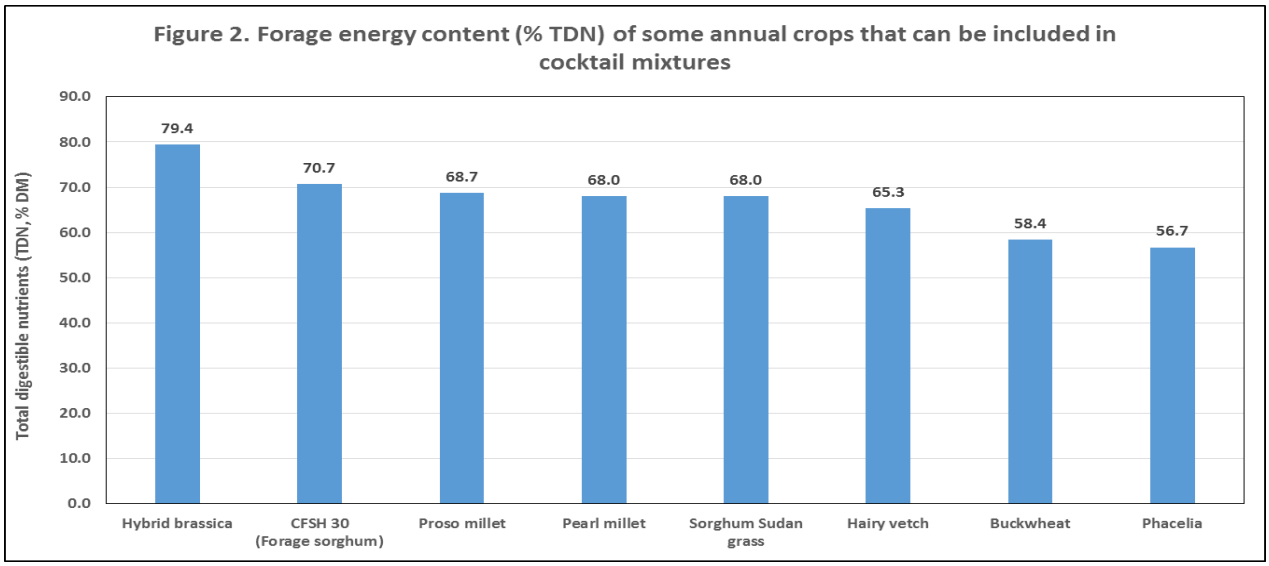
Acid Detergent Fiber (ADF) (Table 1): The fibrous component of a plant represents the least digestible fiber portion of forage or other roughage. This highly indigestible part of forage includes lignin, cellulose, silica and insoluble forms of nitrogen but not hemicellulose. Forages with higher ADF are lower in digestible energy than forages with lower ADF. That means, as the ADF level increases, digestible energy levels decrease. Considering that lower ADF values are preferred, in this study, hybrid brassica had the lowest ADF value and this was 8.1 to 21.3% lower in ADF than other crops. This therefore shows the outstanding forage quality of hybrid brassica for beef cattle. It will be sufficed to say that when all 8 crops tested in this study are presented side by side to cows in a preference study, hybrid brassica would likely be preferred and consumed more than others because of its lower ADF value (18.0%). This would likely be followed by CFSH 30 (Forage sorghum), which had 26.1% ADF content.

Table 1. Forage minerals, acid detergent fiber and some forms of measured energy of 8 cover crops tested in Fairview
(ME - metabolizable energy, NE_G – net energy for gain, NE_L – net energy for lactation, NE_M - net energy for maintenance DE – digestible energy)

Cover Crop	Ca %	P %	Mg %	K %	Na %	ADF %	ME MCal/kg	NEG MCal/kg	NEL MCal/kg	NEM MCal/kg	DE MCal/kg
Proso millet	0.39	0.17	0.42	1.41	0.01	28.0	2.51	1.01	1.57	1.62	3.03
CFSH 30 (Forage sorghum)	0.70	0.22	0.77	3.18	0.02	26.1	2.59	1.07	1.62	1.69	3.12
Pearl millet	0.29	0.23	0.26	1.55	0.01	28.7	2.49	1.00	1.55	1.60	3.00
Sorghum Sudan grass	0.64	0.22	0.37	2.02	0.01	28.7	2.49	1.00	1.55	1.60	3.00
Phacelia	2.98	0.22	0.57	1.38	0.01	39.3	2.08	0.66	1.27	1.23	2.50
Hairy vetch	1.49	0.22	0.49	1.47	0.03	31.2	2.39	0.92	1.48	1.51	2.88
Hybrid brassica	2.33	0.33	0.53	3.78	0.38	18.0	2.91	1.31	1.83	1.96	3.50
Buckwheat	1.59	0.22	0.90	1.89	0.01	37.7	2.14	0.71	1.31	1.28	2.58

Energy: The forage energy (total digestible nutrients, TDN) varied from 56.7% TDN for phacelia to 79.4% TDN for hybrid brassica. Only 2 (buckwheat and phacelia) of the 8 tested cover crops fell short of meeting a mature beef cow's energy requirements, which is 7% at mid-pregnancy stage, 9 at late-pregnancy stage and 11% during lactation. The 6 other crops exceeded the TDN needed by a mature beef cow. For growing and finishing calves, all tested cover crops (except for buckwheat and phacelia) were also able to meet the energy requirements of these calves.

For other forms of energy measured (ME, NE_G, NE_L NE_M & DE) (Table 1), hybrid brassica consistently had higher values than other cover crops tested. Looking at the ME values in the present study, all cover crops (except for phacelia) were well within the suggested daily ME requirements of 2.23 to 2.54 mcal/kg of a mature beef cow. A mature beef cow requires 0.97-1.10 Mcal/kg of NE_M at the dry gestation stage and 1.19-1.28 Mcal/kg NE_M during lactation. Therefore, all the 8 cover crops tested here met the NE_M requirement of a mature beef cow. Also, all cover crops tested met the 0.53-1.37 Mcal/kg of NE_G growing and finishing calves.



Summary: Though DM yield was not determined in this study, looking at the forage quality, it is evident that hybrid brassica generally performed better than other cover crops tested, particularly taking into consideration forage Ca, P, K, Na, ADF, TDN and other forms of energy. The superior quality of hybrid brassica is strongly reflected by the ADF content (18%), which is 8.1 to 21.3% lower than other cover crops tested here. Its protein content (18%) placed it in the top 3 and it far exceeded the protein requirements of young and mature beef and dairy cows. This therefore shows that feeding hybrid brassica to beef cattle will probably not require any supplementation at all. Overall, all cover crops tested here have got high feed values and are therefore suggested for inclusion in cocktail cover crop mixtures in the area.


Buckwheat August 2015

Some notes on Hybrid brassica: Hybrid brassica is an early maturing hybrid brassica, a cross between a forage turnip and a forage rape, with 10-12 weeks crop duration. It has good frost tolerance and retains leaf and stem quality in frosty or cold conditions. Forage Brassicas are useful for extending the grazing season when other forages are less productive. Brassicas can provide higher crude protein and digestibility at half the cost of hay or conserved forages. Brassicas have extremely high yield potential when grown on high fertility soils and properly managed. Brassicas can produce as much as 40 tons (wet) per acre. Hybrid brassica can commonly provide valuable feed when other crops are less productive.

Testing of Barley Varieties for Greenfeed and Silage

Regional Silage Variety Trial (RSVT)

By *Akim Omokanye, PCBFA*

To identify barley varieties that have superior forage production in the Peace, PCBFA took part in the Regional Variety Testing program (Regional Silage Variety Trials (RSVT) in 2015. The program includes testing of new barley varieties as they become available for adaption, forage yield and quality. In addition to the findings presented here from our trial, the results from the RSVTs across the different trial sites in the province will also be reported in the Alberta Seed Guide (www.seed.ab.ca).

Methods

The study site was at the Fairview Research Farm (NW5-82-3W6) on RR #35, MD of Fairview. The site had been in alfalfa hay for several years. The site was sprayed with Roundup the fall before and worked in the spring before seeding . Soil tests at 0-6" showed an organic matter of 3.0 % and a pH of 6.9.

Eight (8) forage type barley varieties were arranged in a randomized complete block design in 4 replications in small plots. Seeding was done on May 25 with a 6-row plot drill at 9 inch row spacing. Fertility according to soil test recommendations for balanced crop nutrition was 200 lb N + 96 lb P + 62 lb K + 75 lb S and applied at seeding. Roundup was used for burn off. In-crop spraying was done with 0.44 L/ha Prestige A + 1.98 L/ha Prestige B. The 8 barley varieties tested include:

Two-row barley varieties-

1. CDC Austenson– rough awn variety
2. CDC Maverick– a new smooth-awned forage barley
3. Canmore– rough awned general purpose (feed & forage) barley
4. CDC Meredith – malting barley
5. Champion– rough awned feed barley
6. TR12733– general purpose (feed & forage) barley
7. TR13740– general purpose (feed & forage) barley

Six-row barley variety tested-

8. Amisk – rough awned, semi-dwarf, general purpose (feed & forage) barley

Forage harvest was done on August 6, 2015 at the soft-dough stage. Four rows per plot were harvested by hand and weighed fresh. Sub-samples (about 500 grams per plot) were dried for some days and later re-weighed for dry matter (DM) content and DM yield estimation. Forage samples were analyzed for quality using standard procedures for wet chemistry by Central Testing Laboratory Ltd., Winnipeg.

Fairview was generally dry in 2015, and grasshopper infestation was very high. Moisture received from seeding to harvest was 4.32", with 1.19 inches received from August 3 to 5, just a few days before forage harvest.

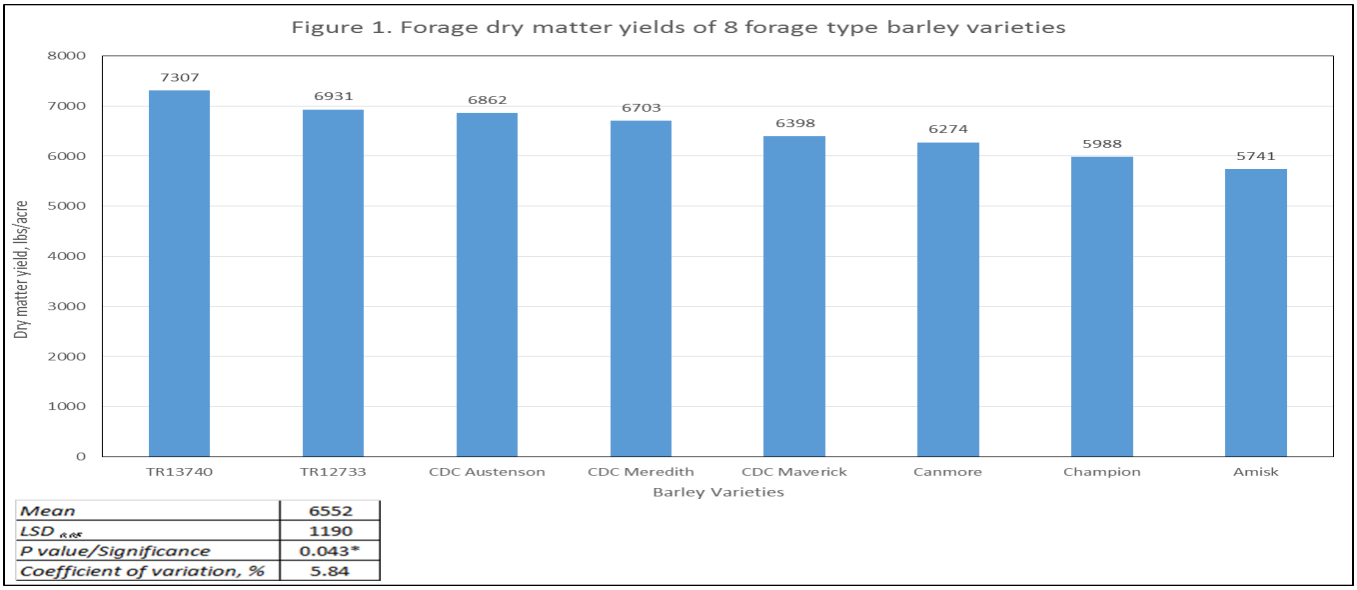
Results

Forage DM yield

TR13740 barley had the highest forage DM yield (7307 lbs/acre), followed by TR12733 (6931 lbs/acre), and then CDC Austenson (6862 lbs/acre) (Figure 1). Amisk had lower DM yield than other varieties. Overall, only TR13740 barley was significantly different than Champion and Amisk barley varieties. Other varieties were statistically similar in DM.

Forage Quality (Table 1)

The forage protein was generally >10% for all barley varieties. Amisk had the highest protein (13.1% CP).



The forage Ca, P, Mg, K and Na values for all barley varieties (Table 1) were adequate for a dry gestating beef cow. None of the varieties had adequate amount of Ca and P for a lactating beef cow.

The Mg and K requirements of a lactating beef cow were however far exceeded by all barley varieties tested here. The 0.10% Na required by a nursing beef cow (0.10% Na) was met by 5 of the 8 varieties tested.

Energy (either harvested by the animal or provided via supplementation) is used by animals to sustain life of the individual (maintenance) and for product formation (growth, gestation, and lactation). The forage energy content (%TDN) was generally high for all barley varieties tested here (Table 1). All barley varieties tested exceeded the recommended TDN values for mature beef cattle (55-65% TDN) as well as being adequate for growing and finishing calves (65-70% TDN).

CDC Meredith consistently had higher values for other energy units of measure (ME, NE_G, NE_L, NE_M and DE) compared to other barley varieties. The energy available for metabolism by animals is referred to as metabolizable energy (ME). Looking at the ME values in the present study, all barley varieties tested here were well within the suggested daily ME requirements of 2.23 to 2.54 mcal/kg for mature beef cattle. A mature beef cow requires 0.97-1.10 Mcal/kg of NE_M at the dry gestation stage and 1.19-1.28 Mcal/kg NE_M during lactation. All the 8 barley varieties tested met the NE_M requirement of a mature beef cow. For growing and finishing calves, which require 0.53-1.37 Mcal/kg of NE_G, all barley varieties were well within this range.

Table 1. Forage quality of 8 forage type barley varieties

(ME - metabolizable energy, NE_G – net energy for gain, NE_L – net energy for lactation, NE_M - net energy for maintenance DE – digestible energy)

	CP %	Ca %	P %	Mg %	K %	Na %	ADF %	TDN %	ME Mcal/kg	NEG Mcal/kg	NEL Mcal/kg	NEM Mcal/kg	DE Mcal/kg
CDC Austenson	10.4	0.29	0.14	0.20	1.28	0.16	27.6	69.2	2.53	1.03	1.58	1.63	3.05
Amisk	13.1	0.30	0.21	0.18	1.27	0.09	25.7	71.2	2.61	1.09	1.63	1.70	3.14
Canmore	11.5	0.31	0.17	0.21	1.23	0.10	27.1	69.7	2.55	1.04	1.59	1.65	3.07
CDC Maverick	12.0	0.32	0.18	0.24	0.97	0.12	24.0	73.0	2.67	1.13	1.67	1.75	3.22
CDC Meredith	11.8	0.29	0.18	0.20	1.00	0.08	21.3	75.9	2.78	1.21	1.74	1.85	3.35
Champion	11.9	0.28	0.20	0.19	1.32	0.09	23.8	73.2	2.68	1.14	1.68	1.76	3.23
TR12733	10.6	0.30	0.17	0.19	1.04	0.11	24.7	72.2	2.65	1.12	1.65	1.74	3.19
TR13740	11.5	0.37	0.18	0.23	1.21	0.13	24.2	72.8	2.66	1.13	1.67	1.75	3.21

Conclusion – TR13740 had the most forage dry matter and forage quality that have been able to meet the protein, macro minerals and energy needs of a dry gestating cow. Generally, the energy (TDN) for barley varieties was very high and good enough for both calves and mature beef cow.

Testing of Oat Varieties for Greenfeed and Silage

Regional Silage Variety Trial (RSVT)

By *Akim Omokanye, PCBFA*

In Alberta, oats have become a reliable source of conserved forage for over-wintering beef cattle. In an effort to continue to identify oat varieties that have superior forage production in the Peace, PCBFA tested a few oat varieties in Fairview in 2015. The test was part of the Regional Silage Variety Trials (RSVTs) testing program, which includes testing of new barley varieties as they become available for adaption, forage yield and quality across Alberta. In addition to the findings presented here from our trial, the results from the RSVTs across the different trial sites in the province will also be reported in the Alberta Seed Guide (www.seed.ab.ca).

Methods

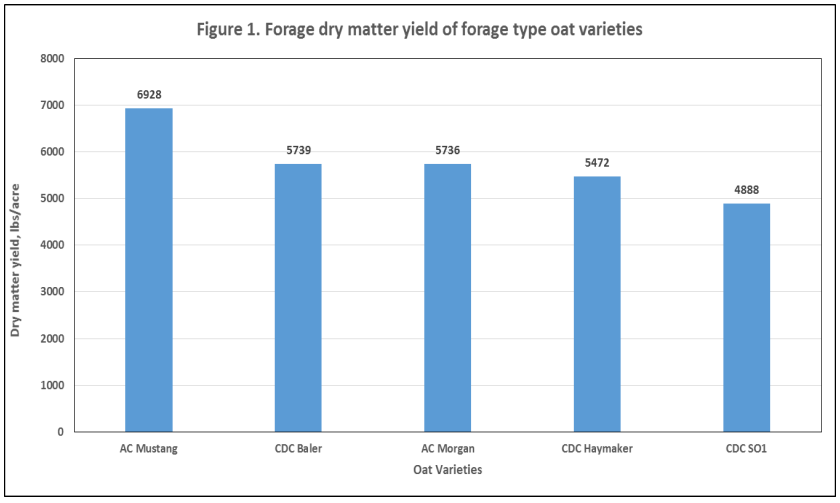
The study site was at Fairview Research Farm (NW5-82-3W6) on RR #35, MD of Fairview. The site used was seeded to alfalfa and had been hayed for more than 10 years. Prior to seeding, soil tests at 0-6" soil depth done at Exova laboratory (Edmonton) showed an organic matter of 3.0 % and a pH of 6.9. The site was sprayed with Roundup the fall before and worked in the spring before seeding .

Five (5) oat varieties were arranged in a randomized complete block design in 4 replications in small plots. Seeding was done on May 25 with a 6-row plot drill at 9 inch row spacing. Fertility according to soil test recommendations for balanced crop nutrition was 200 lb N + 96 lb P + 62 lb K + 75 lb S, applied at seeding. Roundup was used for burn off. In-crop spraying was done with 0.44 L/ha Prestige A + 1.98 L/ha Prestige B. The oat varieties tested were:

1) CDC Baler – forage oat
2) AC Morgan –milling oat, but commonly used for silage or green feed
3) AC Mustang – feed oat
4) CDC SO-1 (Super Oat number 1) – feed/forage oat
5) CDC Haymaker - new forage oat

Forage harvest was done on August 6 at the late milk stage. Four rows per plot were harvested by hand and weighed fresh. Sub-samples (about 500 grams per plot) were dried and later reweighed for dry matter (DM) content and DM yield estimation. Forage samples were analyzed for quality using standard procedures for wet chemistry by Central Testing Laboratory Ltd., Winnipeg.

Fairview was generally dry in 2015, and grasshopper infestation was very high. Moisture received from seeding to harvest was 4.32 inches, with 1.19 inches received from August 3 to 5, which was just a few days before forage harvest.



Results

Forage DM yield (Figure 1)

Mustang oats had the highest forage DM yield (6928 lbs/acre), followed by both CDC Baler and Morgan oats, which had similar DM yields (2.87 ton/acre). CDC SO-I had the least DM yield (4888 lbs/acre). The ability of AC Mustang to produce more DM than other varieties probably has to do with their adaptation to growing conditions in the Peace.

Forage Quality

Protein & Minerals - The forage protein (CP) content of oat varieties tested varied from 10 to 12% CP. The forage Ca was highest for CDC Baler. Both CDC SO-I and AC Mustang had higher forage P than other oat varieties. The forage Mg content was in order of CDC Baler >CDC SO-I > AC Mustang > CDC Haymaker/AC Morgan. Forage K content varied from 1.23% K for CDC SO-I to 1.36% K for CDC Haymaker. Both CDC Baler and CDC SO -I had higher Na than other oat varieties.

The requirements for protein (CP), Ca, P (except for CDC Haymaker), Mg, K and Na of a dry gestating beef cow (mid- & late-pregnancy stages), have been met by all oat varieties tested here.

For a lactating beef cow, all oats (except AC Morgan, which slightly fell short) had sufficient protein for this category of cow. Only CDC Baler had adequate Ca for a lactating cow. All varieties fell short of meeting the P requirements of a lactating cow. All oat varieties exceeded the requirements of Mg, K and Na of a lactating cow.

The forage energy (TDN) content was generally above 60% for all oat varieties. This shows that all oats tested had adequate TDN for a dry gestating cow, which requires 55% TDN in the second trimester and 60% TDN in the third trimester. For a lactating cow which requires 65% TDN, most oat varieties would need some energy supplementation.

A mature beef cattle requires ME in the range of 2.23 to 2.54 mcal/kg and all oats tested fell within this range. Similarly, all oats were within the suggested 0.97-1.10 Mcal/kg of NE_M for a cow in dry gestation stage and 1.19-1.28 Mcal/kg NE_M during lactation. For growing and finishing calves, which require 0.53-1.37 Mcal/kg of NE_G, all oats were within this range.

Table 1. Forage quality of 5 forage type oat varieties

(CP—Crude protein, ADF - Acid detergent fiber, TDN - total digestible nutrients, ME - metabolizable energy, NE_G – net energy for gain, NE_L – net energy for lactation, NE_M - net energy for maintenance DE – digestible energy)

Variety	CP %	Ca %	P %	Mg %	K %	Na %	ADF %	TDN %	ME Mcal/kg	NEG Mcal/kg	NEL Mcal/kg	NEM Mcal/kg	DE Mcal/kg
CDC Baler	11.8	0.44	0.18	0.25	1.28	0.33	32.0	64.4	2.36	0.89	1.46	1.48	2.84
CDC Haymaker	10.8	0.29	0.17	0.20	1.36	0.28	34.8	61.5	2.25	0.80	1.39	1.38	2.71
CDC SO1	11.1	0.32	0.20	0.24	1.23	0.35	31.7	64.8	2.37	0.90	1.47	1.49	2.86
AC Mustang	11.5	0.32	0.20	0.23	1.26	0.27	34.0	62.4	2.28	0.83	1.41	1.41	2.75
AC Morgan	10.3	0.35	0.18	0.20	1.35	0.24	33.7	62.6	2.29	0.84	1.42	1.42	2.76

Conclusion— The AC Mustang oat variety yielded the most forage dry matter compared to the other oat varieties. AC Mustang also had good forage quality including protein and energy. The ability of AC Mustang to produce more DM than other varieties probably has to do with their adaptation to growing conditions in the Peace.

Testing of some Wheat & Triticale varieties for Greenfeed and Silage

Regional Silage Variety Trial (RSVT)

By *Akim Omokanye, PCBFA*

The RSVTs help to provide information with regard to the quantity and quality of annual crops cut for greenfeed and silage to local producers. Wheat is suited to all soil zones of the province. Some wheat varieties can produce as much dry matter as oats or barley. Wheat quality for silage or greenfeed is generally lower than barley. Triticale is more tolerant of dry conditions than oats. Triticale is later maturing than oats or barley. For greenfeed or silage, wheat should be cut in the soft-dough stage, while triticale should be cut at the milk stage.

Methods

The trial was setup at the Research Farm (NW5-82-3W6) on RR #35, Fairview. Prior to seeding, soil tests at 0-6" soil depth done at Exova laboratory (Edmonton) showed an soil organic matter of 3.0 % and a pH of 6.9. The site was sprayed with Roundup the fall before and worked in the spring before seeding .

We seeded five (5) spring wheat and three (3) spring triticale varieties, which were arranged in a randomized complete block design in 4 replications in small plots. Seeding was done on May 25 with a 6-row plot drill at 9 inch row spacing. Fertility according to soil test recommendations for balanced crop nutrition was 200 N lb + 96 lb P + 62 lb K + 75 lb S and applied at seeding. Roundup was used for burn off. In-crop spraying was done with 0.44 L/ha Prestige A + 1.98 L/ha Prestige B.

Some information on the varieties seeded:

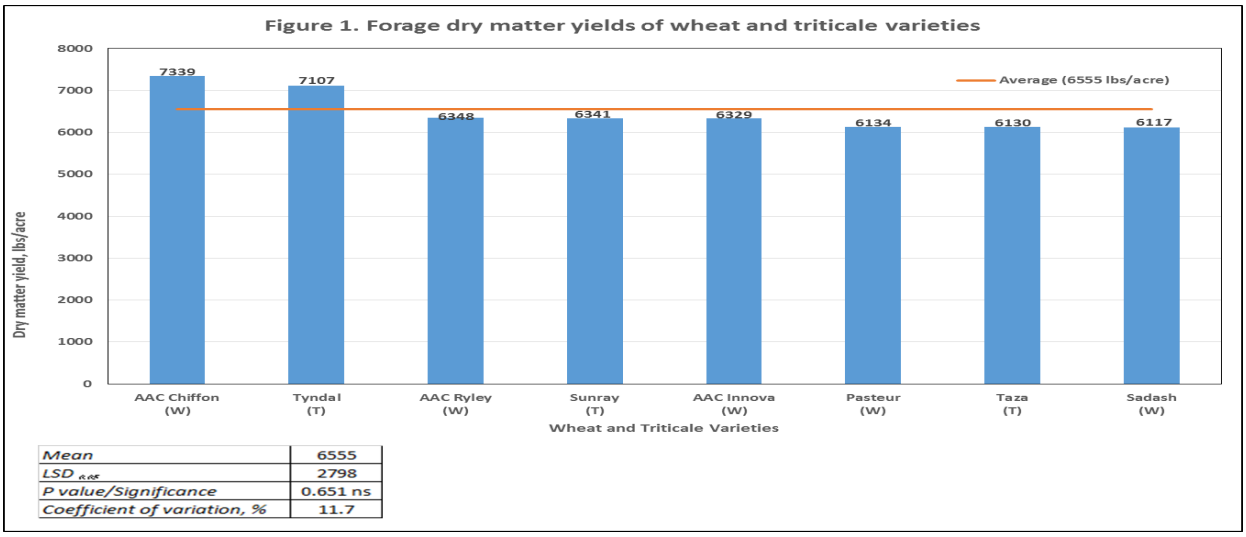
1. AAC Chiffon - soft white spring wheat
2. AAC Innova - registered in 2013, spring wheat in the general purpose class
3. AAC Ryley - registered in 2013, spring wheat in the general purpose class
4. Pasteur - spring wheat in the general purpose class
5. Sadash - soft white spring wheat type
6. Sunray - spring triticale, regular awned-grain variety. Sunray is the first triticale variety with ergot resistance. Ergot can be a problem when triticale is used as a feed grain because it is toxic to animals and reduces overall grain quality
7. Taza - spring triticale, an awnletted (reduced awn expression), for use as a feed grain, conserved forage & swath grazing crop
8. Tyndal - awnletted (reduced awn expression), for use as a feed grain and conserved forage

Forage harvest was done on August 10. Four rows per plot were harvested by hand and weighed for fresh weight. Sub-samples (about 500 grams per plot) were dried and later reweighed for dry matter (DM) content and DM yield estimation. Forage samples were analyzed for quality using standard procedures for wet chemistry by Central Testing Laboratory Ltd., Winnipeg. Fairview was generally dry in 2015, and grasshopper infestation was very high.

Results

Forage Yield

The forage dry matter (DM) was not statistically different among wheat and triticale varieties tested, but AAC Chiffon wheat and Tyndal triticale appeared to have higher DM values than other wheat and triticale varieties (Figure 1).



Forage Quality

The forage protein was generally above 10%, with AAC Innova wheat variety recording the highest value (12.0% CP) (Table 1). This indicates that most wheat and triticale varieties tested here were within the recommended protein requirements for a dry gestating cow, while only a few varieties appeared to slightly fall short of the 11% needed by a lactating cow.

The forage Ca content varied from 0.12% Ca for AAC Ryley wheat to 0.19% Ca for AAC Innova wheat (Table 1). In this study, only 3 wheat varieties and one triticale variety had adequate Ca content that is required by a dry gestating cow (0.18% Ca). All wheat and triticale varieties tested did not meet the Ca requirement of a lactating cow (0.42% Ca).

All triticale varieties appeared to have higher forage P content than wheat varieties (Table 1). A cow in the second and third trimester (dry gestating cow) requires 0.16% P and 0.12% Mg, while during lactation, the cow requires 0.26% P and 0.20% Mg. In this study, all wheat and triticale varieties had an adequate amount of P and Mg for a dry gestating cow, but none of the varieties had enough P and Mg for a lactating cow. The forage K was highest for AAC Innova wheat (1.40% K) and lowest for AAC Ryley wheat (0.98% K) (Table 1). All wheat and triticale varieties tested far exceeded the K requirements by a mature beef cow. All varieties tested here were short of meeting the Na requirements of both dry gestating and lactating cows.

The forage energy content (%TDN) appeared to be higher for triticale varieties (69.3-70.9% TDN) than wheat varieties (63.8-69.1% TDN). Except for Pasteur wheat (63.8% TDN), all varieties tested exceeded the energy requirements of mature beef cattle.

Table 1. Forage quality of 8 forage type wheat and triticale varieties

(CP—Crude protein, ADF - Acid detergent fiber, TDN - total digestible nutrients, ME - metabolizable energy, NE_G – net energy for gain, NE_L – net energy for lactation, NE_M - net energy for maintenance DE – digestible energy)

Wheat/Triticale Variety	CP %	Ca %	P %	Mg %	K %	Na %	ADF %	TDN %	ME Mcal/kg	NEG Mcal/kg	NEL Mcal/kg	NEM Mcal/kg	DE Mcal/kg
AAC Chiffon - W	10.8	0.18	0.18	0.16	1.27	0.04	29.8	66.9	2.45	0.96	1.52	1.56	2.95
AAC Innova - W	12.0	0.19	0.20	0.15	1.40	0.01	31.2	65.3	2.39	0.92	1.48	1.51	2.88
AAC Ryley- W	11.1	0.12	0.20	0.13	0.98	0.01	28.2	68.5	2.51	1.01	1.56	1.62	3.02
Pasteur- W	10.7	0.19	0.17	0.15	1.27	0.00	32.6	63.8	2.33	0.87	1.45	1.46	2.81
Sadash- W	11.6	0.15	0.17	0.14	1.30	0.00	27.7	69.1	2.53	1.03	1.58	1.63	3.05
Taza - T	10.9	0.14	0.23	0.13	1.20	0.00	26.3	70.5	2.58	1.06	1.61	1.68	3.11
Sunray - T	10.4	0.14	0.22	0.12	1.19	0.01	27.5	69.3	2.53	1.03	1.58	1.63	3.05
Tyndal -T	11.3	0.18	0.22	0.14	1.20	0.00	26.0	70.9	2.59	1.07	1.62	1.69	3.12

Tyndal and Taza triticale varieties consistently had higher values for other energy units of measured (ME, NE_G, NE_L, NE_M and DE) than wheat and triticale barley varieties. The energy available for metabolism by animals is referred to as metabolizable energy (ME). All varieties tested were well within the suggested daily ME requirements of 2.23 to 2.54 mcal/kg for mature beef cattle. Also, all varieties slightly exceeded the requirements of 0.97-1.10 Mcal/kg of NE_M (dry gestation stage) and 1.19-1.28 Mcal/kg NE_M (during lactation) of a mature beef cow. For growing and finishing calves, which require 0.53-1.37 Mcal/kg of NE_G, all varieties were well within this range.

Conclusion - Though the varieties tested here did not differ statistically in dry matter yields, but both AAC Chiffon wheat and Tyndal triticale appeared to have move forage dry matter than other varieties. Both AAC Chiffon wheat and Tyndal triticale were also able to meet the protein, macro minerals (except for Na) and energy (TDN) requirements of a dry gestating cow.

Evaluation of 23 Low Heat Unit Corn Hybrids for Forage

By *Akim Omokanye, PCBFA*

An important focus by PCBFA has been reducing feed costs by examining different options for extending the grazing season in the Peace. For some years now, corn grazing using low heat unit hybrids has been a big part of PCBFA's extension service. Producers with experience grazing standing corn to extend the cows' days on pasture have reported that this systems reduces the amount of stored feed required to feed cows in fall and even well into the winter months. Producers have reported that their total cost is well below the alternative cost of feeding stored hay to the animals in a confined area. PCBFA continues to evaluate new corn hybrids as they become available so as to provide producers with a variety of options as to what they can seed for the heat units we have in the Peace.

Table 1. Corn hybrids, marketing companies and heat unit requirements to full grain maturity stage

Corn Hybrid	Marketed by	Heat unit requirement
E47A17 R	Brett Young-Elite	2050
Venza R	Brett Young-Elite	2500
Fusion RR	Brett Young-Elite	2350
E44A02 R	Brett Young-Elite	2150
13-8084	Brett Young-Elite	
E48A27 R	Brett Young-Elite	2250
39D97 RR2	Pioneer Seeds	2250
P7213 R	Pioneer Seeds	2050
7332 R	Pioneer Seeds	2050
P7443 R	Pioneer Seeds	2100
Tundra R	Brett Young-Elite	2300
2262RR	Pick Seed	2075
Extreme RR	Pick Seed	2775
2501RR	Pick Seed	2300
2D093	Hyland	2350
DKC 26-25	Monsanto	2125
39F44	Pioneer Seeds	2000
39B90	Pioneer Seeds	2200
P7211HR	Pioneer Seeds	2050
P7202-YHR	Pioneer Seeds	2050
E53B22R	Brett Young-Elite	2500
Yukon R	Brett Young-Elite	2150
E50G27R	Brett Young-Elite	2350

Methods

We carried out small plot field trial at the Fairview Research Farm (NW5-82-3W6) on RR #35, MD of Fairview in collaboration with Mackenzie Applied Research Association (MARA) based out of Fort Vermilion. Prior to seeding, soil test was carried out, we cultivated the land thereafter and we broadcast 104 lbs/ac (urea) + 19 lbs/ac (11-52-0) + 33 lbs/ac (0-0-60) with an ATV mounted spreader.

A randomized complete block design (RCBD) with four (4) replications was used. Twenty three (23) corn hybrids with different heat units varying from 2000-2775 were seeded (see Table 1) for their forage yields and feed quality. Most hybrids used have lower CHU requirements (2000-2300). Only 3 corn hybrids had CHUs >2350. Plot size was 2.25 m x 8.0 m.

A 6-row corn planter with 30" row spacing was used to seed the trial at 28,500 kernels per acre. Seeding was done on May 21. In crop spraying was done once with Roundup @ 0.8 L/acre at the 5 leaf stage.

Harvesting for wet fresh, forage dry matter (DM) & quality was done on September 29. After weighing the harvested corn forage, 5 random plants from each corn hybrid were chopped with a small wood chipper for feed tests in a commercial laboratory (Central Testing Laboratory, Winnipeg).

Results

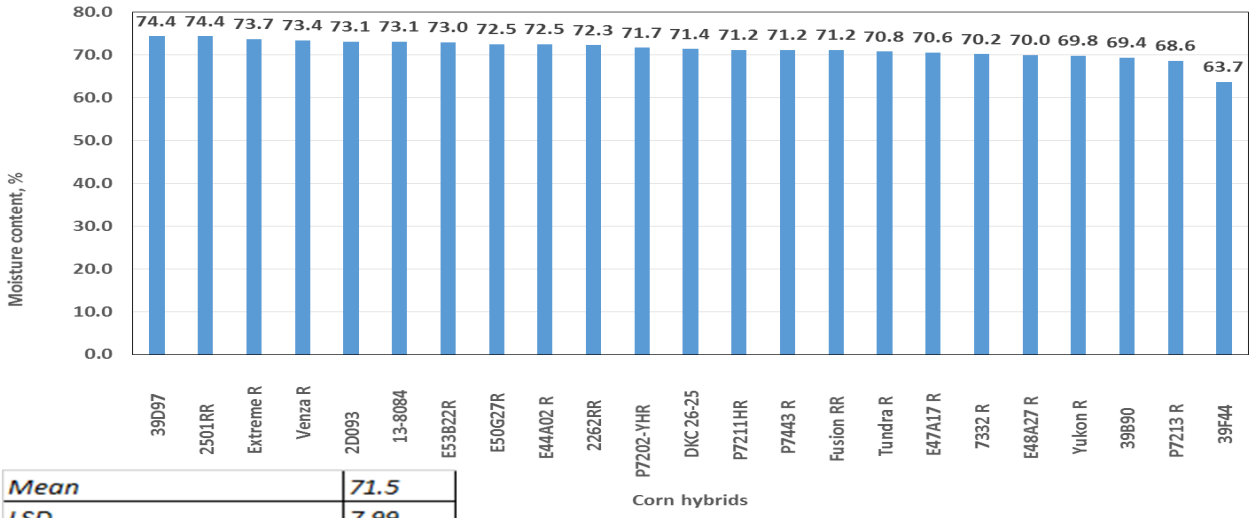
Cob development and stage

Only 8 corn hybrids (39F44, P7213R, 7332R, E47A17R, 2262RR, P7211HR 7332R and P7211HR) had ideal corn development, more kernels and reached or exceeded the half milk line stage. Venza R, Extreme RR and E53B22R in particular had poorly developed kernels. Generally, it appeared that hybrids that require lower heat units performed better in terms of plant growth and development.

Forage Moisture Content

The corn forage moisture content at harvest significantly varied from 63.7% for 39F44 to 74.4% for both 39D97 and 2501RR, giving a difference of 10.7% between the highest and lowest moisture content. For corn silage, moisture content in the range of 65-70% is recommended. Only 5 of the 23 corn hybrids tested fell within this range, with most corn hybrids giving higher moisture content at harvest. For corn silage or grazing, corn hybrids that would reach the half milk line growth stage (about 65% moisture) by the time the killing frost hits are recommended for the Peace region. 39F44 exceeded the half milk line stage and that is why it had lower moisture than others. Generally, the forage moisture content appeared to be related to the corn heat units (CHU) requirements for the corn hybrids seeded. The higher the CHUs, the higher the moisture content at harvest by September 29.

Figure 1. Forage moisture content of corn hybrids at harvest

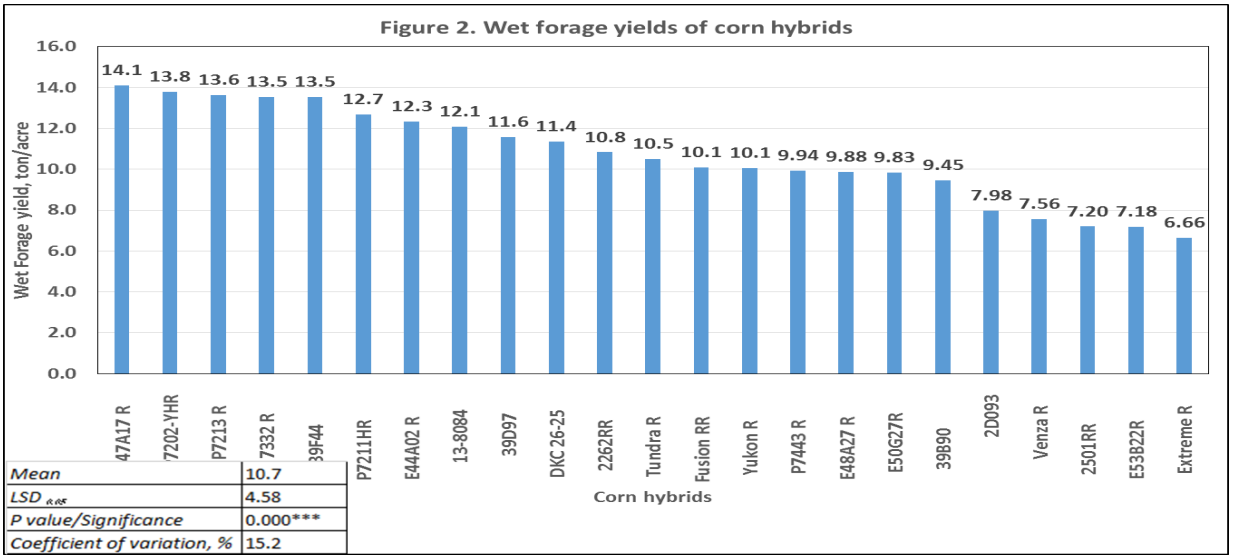


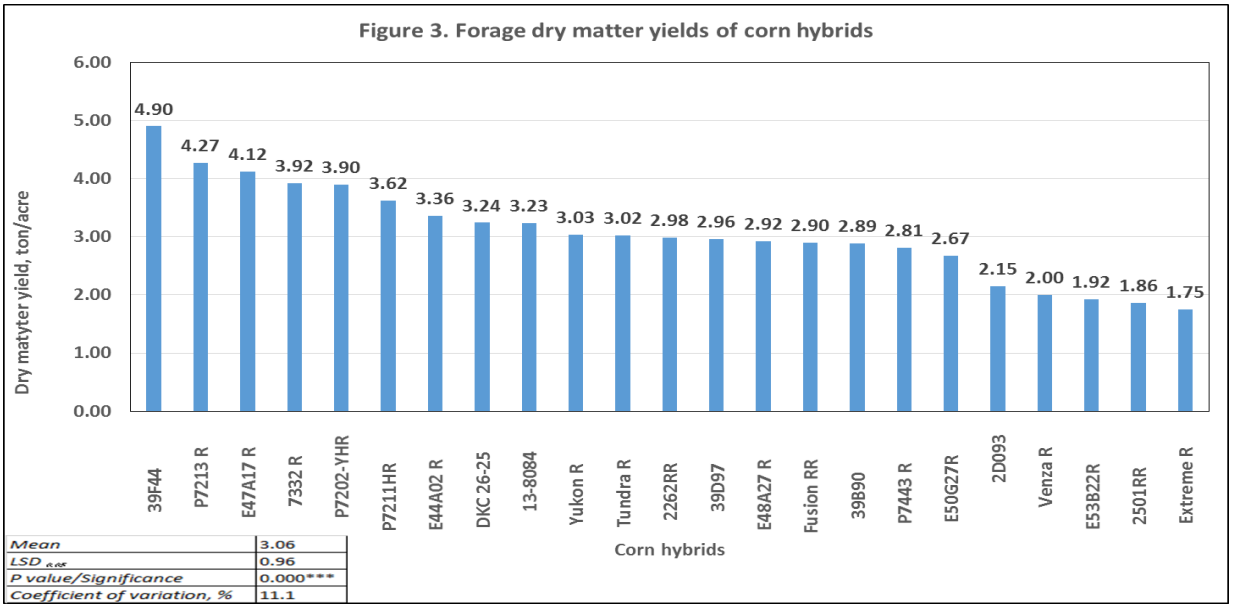
Mean	71.5
LSD 0.05	7.99
P value/Significance	0.003**
Coefficient of variation, %	3.96

Forage Yield

The wet forage yield was highly influenced by corn hybrids tested. 14 of the 23 corn hybrids had >10.0 tons wet forage yield/acre, while others had between 6.7 to 9.9 tons wet yield/acre (Figure 2). The top 5 corn hybrids in terms of wet forage yield are: E47A17R, P7202-YHR, P7213 R, 7332R & 39F44. Corn hybrids requiring higher CHUs had lower wet forage yield, while those requiring lower CHUs appeared to have higher wet forage yields.

Forage dry matter (DM) yield was generally low because 2015 was dry in Fairview. The DM yield varied from 1.75 tons/acre for Extreme R to 4.90 tons/acre for 39F44 (Figure 3). Only 3 of the 23 corn hybrids tested had >4.0 tons DM/acre. The top corn hybrids in terms of DM yield were: 39F44, P7213 R, E47A17 R, 7332 R &P7202-YHR. Here also, as with wet forage yield, corn hybrids requiring higher CHUs had lower forage DM yield, while those requiring lower CHUs appeared to have higher forage DM yields.





Corn Forage Quality

The forage protein varied from 10.4 to 12.8% CP for all corn hybrids. The CP values are well within the recommended protein values for mature beef cattle. For growing & finishing calves, which require 12-13% CP, only 5 hybrids (Yukon R, P7211HR, 2D093, E50G27R & 13-8084) met the CP requirements of these calves.

The Ca, P, Mg and K requirements of a dry gestating cow (second & third trimester) have all been met by the corn varieties tested here. For a lactating cow, only 3 (39B90, 2D093 and E53B22R) of the 23 corn hybrids tested adequately meet the Ca requirement for this category of cow. Other corn hybrids fell short of meeting the Ca requirement of a lactating cow. None of the hybrids had enough P for a lactating cow. All corn hybrids exceeded the Mg and K requirements of a lactating cow, which requires 0.20% Mg and 0.70% K.

39F44 had the lowest ADF (25.2%) as well as the highest energy (71.7% TDN). 39F44 requires 2000 CHUs, so it exceeded the half milk line stage by about 25% by the time we got the first killing frost. All corn hybrids have been able to meet a beef cow's energy requirements by the second trimester (55% TDN) and third trimester (60% TDN). But only 3 hybrids fell short of meeting 65% TDN that is needed by a lactating beef cow. Also, most corn hybrids were well within the suggested 65-70% TDN for growing and finishing calves.

For other energy units of measure (ME, NE_G, NE_L, NE_M and DE), 39F44 had higher values than other corn hybrids. The energy available for metabolism by animals is referred to as metabolizable energy (ME) and all corn hybrids met the daily ME requirements of 2.23 to 2.54 mcal/kg for mature beef cattle. A mature beef cow requires 0.97-1.10 Mcal/kg of NE_M at the dry gestation stage and 1.19-1.28 Mcal/kg NE_M during lactation. All the 23 corn hybrids tested here met the NE_M requirement of a mature beef cow. For growing and finishing calves, which require 0.53-1.37 Mcal/kg of NE_G, all hybrids were adequate in NE_G.

Table 2. Forage quality of corn hybrids tested

(CP—Crude protein, ADF - Acid detergent fiber, TDN - total digestible nutrients, ME - metabolizable energy, NE_G – net energy for gain, NE_L – net energy for lactation, NE_M - net energy for maintenance DE – digestible energy)

Corn Hybrid	CP (%)	Ca (%)	P (%)	Mg (%)	K (%)	Na (%)	ADF (%)	TDN (%)	ME (Mcal/kg)	NEL (Mcal/kg)	NEM (Mcal/kg)	NEG (Mcal/kg)	DE (Mcal/kg)
39F44	11.7	0.34	0.24	0.29	1.31	0.01	25.2	71.7	2.62	1.64	1.71	1.10	3.16
E47A17 R	11.9	0.41	0.24	0.35	1.25	0.01	28.6	68.1	2.49	1.55	1.60	1.00	3.00
7332 R	11.6	0.41	0.22	0.35	1.38		28.6	68.1	2.49	1.55	1.60	1.00	3.00
39B90	11.7	0.47	0.22	0.41	1.26		31.6	64.9	2.37	1.47	1.49	0.90	2.86
Yukon R	12.6	0.41	0.24	0.34	1.14		29.6	67.0	2.45	1.53	1.56	0.96	2.95
P7211HR	12.4	0.39	0.21	0.43	1.18		28.2	68.5	2.51	1.56	1.62	1.01	3.02
P7213 R	11.5	0.32	0.25	0.34	1.28	0.01	28.0	68.7	2.51	1.57	1.62	1.01	3.03
39D97	10.7	0.35	0.21	0.38	1.17		30.0	66.6	2.44	1.52	1.55	0.96	2.94
2501RR	11.2	0.37	0.21	0.33	1.26	0.01	31.1	65.4	2.4	1.49	1.52	0.92	2.89
2D093	12.1	0.47	0.23	0.40	1.20	0.01	30.1	66.5	2.43	1.51	1.54	0.95	2.93
DKC 26-25	10.8	0.31	0.20	0.32	1.30	0.01	31.1	65.4	2.40	1.49	1.52	0.92	2.89
E53B22R	11.4	0.42	0.20	0.37	1.19		32.8	63.7	2.33	1.44	1.46	0.87	2.81
2262RR	11.4	0.33	0.21	0.33	1.39		28.8	67.9	2.48	1.55	1.59	0.99	2.99
P7443 R	11.9	0.34	0.22	0.30	1.48		29.6	67.0	2.45	1.53	1.56	0.96	2.95
Fusion RR	11.8	0.38	0.22	0.32	1.14		29.8	66.8	2.44	1.52	1.55	0.96	2.94
Tundra R	10.8	0.34	0.20	0.33	1.27		30.3	66.3	2.42	1.51	1.54	0.94	2.92
P7202-YHR	11.2	0.32	0.20	0.35	1.35		28.5	68.2	2.50	1.55	1.61	1.00	3.01
E48A27 R	11.0	0.31	0.21	0.30	1.16		30.9	65.7	2.40	1.49	1.52	0.92	2.89
Extreme R	11.1	0.33	0.21	0.33	0.98		34.2	62.1	2.27	1.41	1.40	0.82	2.74
Venza R	11.9	0.27	0.23	0.29	1.18		32.8	63.6	2.32	1.44	1.45	0.86	2.80
E44A02 R	10.4	0.34	0.22	0.32	1.17		29.8	66.8	2.45	1.52	1.56	0.96	2.95
E50G27R	12.5	0.34	0.25	0.37	1.32		30.7	65.9	2.41	1.50	1.53	0.93	2.90
13-8084	12.8	0.37	0.23	0.40	1.25		29.0	67.7	2.47	1.54	1.58	0.98	2.98
Mean	11.6	0.36	0.22	0.35	1.24	0.01	30.0	66.6	2.44	1.52	1.55	0.95	2.94

Conclusion – The corn hybrids mostly had similar forage quality, but in terms of forage DM, ADF and TDN, the top performers include 39F44 and P7213R. This shows that it is important to seed low heat units corn hybrids Peace in order to have better cob development and for the kernels to reach the half milk line stage that is required for silage and grazing.

Corn Seeding Rates Trial

Collaborating Producer: Koos & Barbara Bos, Peace River

By *Akim Omokanye, PCBFA*

Plant population refers to the number of plants per acre; planting or seeding rate refers to the number of seeds planted per acre. Optimum plant population depends on factors such as hybrid, moisture stress level, soil fertility, and yield goal. In the Peace, for silage or grazing, the suggested seed rate has been 30,000 kernels per acre for years and the recommendation has been based on studies carried out elsewhere, outside of the Peace region. In collaboration with Koos & Barbara Bos, PCBFA carried out a trial to examine optimum seeding rate for corn grazing or silage production.

Methods

The trial site was at Koos & Barbara Bos, near the Peace River Airport. The site has had corn for 6 years and has not received any fertility in the last 4 years, so no fertilizer was applied to this year's corn crop.

DuPont Pioneer 39F44 corn hybrid (Roundup Ready corn) with 2000 corn heat units (CHUs) requirement was seeded on May 17 with a 12-row corn planter at 22" seed row spacing. There were 4 treatments (seeded kernels per acre) consisting of:

1) 38,049 kernels/acre
2) 36,146 kernels/acre
3) 34,425 kernels/acre
4) 32,858 kernels/acre

Spraying to control weeds was done with Roundup®. According to Alberta Agriculture and Forestry (http://agriculture.alberta.ca/acis/alberta-weather-data-viewer.jsp), the calculated CHUs from seeding date (May 17) to corn forage harvest date (October 6) was 2005 for Peace River area, while the long-term average for the same period (May 17-October 6) was 1904.

Corn forage yield was determined from several 23.8' row lengths when most cobs were at the half milk line stage. Plant height was measured and the number of cobs per plant counted at harvest. Notes were also taken on cob development and kernel stage. Wet corn forage samples (whole plant) were analyzed by A&L Canada Laboratories Inc., London, Ontario.

Results

Plant height (Table 1) - Corn seeded at 32,825 kernels per acre grew taller than other seed rates at harvest. Seeding at 34,425 to 38,049 kernels/acre produced similar plant heights.

Forage yield (Table 1) - Wet forage yield was higher for both 38,049 and 36,146 kernels/acre seeding rates (14 tons/acre) compared to other seeding rates. The forage dry matter (DM) yield appeared to be slightly favoured by seeding at 38,049 kernels/acre (4.0 tons DM/acre) compared with other seeding rates. But overall, the differences between seeding rates were negligible.

Forage Quality

Protein (Table 1)- The forage protein content appeared to be slightly higher for the lowest seed rate 32,858 kernels/acre (12% CP) than other seed rates. Generally, the protein requirements of a dry gestating cow, 7% CP at mid-pregnancy and 9% CP at late-pregnancy were met by all seed rates, but only the lowest seed rate (32,858 kernels/acre) had adequate protein that is needed by a lactating beef cow (11% CP). So, this means that the lowest seed rate (32,858 kernels/acre) had adequate protein for beef cattle.

Table 1. Plant height, moisture content at harvest and forage yields of 39F44 corn hybrid following 4 seed rates

Seed Rate (kernels/acre)	**Plant height** *cm*	**Moisture** *%*	**Wet yield** *ton/acre*	**DM yield** *ton/acre*	**CP** *%*
38,049	171	71.2	13.9	3.99	10.1
36,146	168	75.0	13.9	3.47	10.1
34,425	169	73.5	12.5	3.32	9.48
32,858	182	73.9	13.2	3.45	11.7

Macro minerals (Table 2)- The forage Ca content varied from 0.16% Ca for both 34,425 and 32,858 kernels/acre to 0.21% Ca for 38,049 kernels/acre. The forage Ca content appeared to decrease slightly with increased seed rates. Only 38,049 kernels/acre had adequate Ca for a dry gestating cow, which requires 0.18% Ca, while others fell short of meeting this category of a cow's Ca requirement. All seeding rates failed to meet the 0.42% Ca needed by a lactating beef cow.

For the forage P content, increased seeding rates appeared to have slightly increased forage P. All seed rates had sufficient P for a dry gestating cow, but none of the seed rates had adequate P for a lactating beef cow.

The forage K, S and Mg respectively varied from 1.05-1.19% K, 0.08-0.10% S and 0.18-0.21% Mg for the seed rates. The forage Na content was same for all seed rates (0.01%). The Mg (0.12% Mg) and K (0.60% K) requirements by a dry gestating beef cow have been met by the four seed rates. For a lactating beef cow, forage K content was adequate, while none of the seed rates had sufficient Mg for a nursing cow. Both S and Na requirements by mature beef cattle were not met by any of the seed rates.

Table 2. Corn forage macro and trace minerals for 39F44 at four seed rates

	Macro minerals							**Trace minerals**			
Seed Rate (kernels/acre)	**Ca (%)**	**P (%)**	**Ca:P**	**K (%)**	**S (%)**	**Mg (%)**	**Na (%)**	**Cu (ug/g)**	**Zn (ug/g)**	**Fe (ug/g)**	**Mn (ug/g)**
38,049	0.21	0.17	1.24	1.11	0.09	0.18	0.01	4.41	33.1	279	26.7
36,146	0.17	0.20	0.85	1.05	0.08	0.20	0.01	4.08	25.5	131	13.7
34,425	0.16	0.20	0.80	1.22	0.09	0.18	0.01	3.92	26.4	121	14.6
32,858	0.16	0.22	0.73	1.19	0.10	0.21	0.01	5.09	22.9	101	13.7

Detergent Fibers & relative Feed Value (Table 3) - The forage fiber content, ADF & NDF, is a strong predictor of forage quality, since it is the poorly-digested portion in the cell wall. The ADF & NDF appeared to be lower for the lowest seed rate (32,858 kernels/acre) than other seed rates. The RFV combines estimated NDF and ADF into a single index. The RFV obtained were well within the suggested RFVs for beef cows (90-115 RFV).

Energy (Table 3) - Energy gives the ability to use the building blocks for growth and other productive purposes. Using Total digestible nutrients (TDN), the rule of thumb is 55-60-65; this rule says that for a mature beef cow to maintain her body condition score (BCS) through the winter, the ration must have a TDN energy reading of 55% in mid pregnancy, 60% in late pregnancy and 65% after calving. The forage TDN obtained in this study varied from 63-66% TDN, indicating that all seeding rates provided sufficient TDN needed by a dry gestating cow (mid-late pregnancy).

Table 3. Forage detergent fibers and energy contents of 39F44 corn seeded at 4 rates
(ADF - Acid detergent fiber, NDF– Neutral detergent fiber, TDN - total digestible nutrients, ME - metabolizable energy, NE_G – net energy for gain, NE_L – net energy for lactation, NE_M - net energy for maintenance, RFV – Relative feed value)

Seed Rate (kernels/acre)	Detergent Fibers		Energy				
	ADF (%)	NDF (%)	TDN (%)	NEL (Mcal/kg)	NEG (Mcal/kg)	NEM (Mcal/kg)	RFV
38,049	33.2	58.8	63.1	1.43	0.82	1.54	100
36,146	30.5	56.8	65.1	1.48	0.88	1.60	107
34,425	31.2	55.4	64.6	1.47	0.87	1.59	108
32,858	29.5	55.1	65.9	1.50	0.90	1.62	111

Conclusion – The highest seed rate (38,049 kernels/acre) just slightly had more forage DM than other seeding rates. But generally, seeding rates did not have any significant influence on forage DM yield. In terms of forage quality, the lowest seeding rate (32, 858 kernels/acre) seemed to favour protein and detergent fiber contents and this is reflected by the highest relative feed value (RFV) obtained for the lowest seed rate (32, 858 kernels/acre).

On-farm corn trials for Grazing or Silage

Collaborators: Pat & Jay Eaton's Ranch (Valleyview), Denis Bouvier (Guy) & DuPont Pioneer

By *Akim Omokanye, PCBFA*

In parts of the Peace, the practice of extended winter grazing with standing forage corn is continuing to gain more popularity among producers as new low corn heat unit varieties become available. The selection of corn hybrids for grazing should be narrowed to hybrids bred for silage or grazing. These have been bred for high forage yields, high digestibility, low fiber levels, and high fiber digestibility. Hybrid selection should start with identifying a group of hybrids that are adapted to the area in terms of days to maturity and the required heat units, disease and insect resistance, drought tolerance, and tonnage. Standing corn has the nutritive composition to meet the requirements for many categories of livestock. Research studies have shown that stocker cattle, beef heifers, and cows have excellent weight gains grazing corn. The objective was to evaluate growth, forage yield and quality of new versus old corn hybrids.

Site 1 - Corn Variety Evaluation (Pat & Jay Eaton's Ranch, Valleyview, MD of Greenview)

Methods

Trial site: The study was carried out on Alder Ridge Road by RGE road 204 between Guy and Valleyview.
The following 5 DuPont Pioneer Roundup ready corn hybrids were seeded:

1. 39F44 (2000 heat units)
2. 7202 (2050 heat units)
3. P7211HR (2050 heat units)
4. 7332 (2050 heat units)
5. P7213 (2150 heat units)

Seeding was done on May 18 at 30,000 corn kernels per acre with a corn plater. Fertility was according to soil test recommendation and the field was sprayed with Roundup to control weeds. The 5 varieties were replicated two times. Harvesting for determination of forage yield and quality was done on October 7.

Results

Plant height (Table 1) - P7211HR corn hybrid grew tallest (6.46 ft), followed by corn hybrid 7202 (6.23 ft) and then 39F44 (6.20 ft). Corn hybrid 7332 was very short (5.51 ft) compared to other corn hybrids.

Moisture content (Table 1) - Forage moisture content at harvest was also highest for P7211HR (66%), followed by 7202 (62%) and then 39F44 (57%).

Forage dry matter (DM) (Table 1) - The DM yield was highest for 39F44 (5.57 ton/acre), followed by 7332 (4.81 ton/acre) and then by 7202 (4.62 ton/acre). P7211HR had the lowest forage DM yield.

Protein (Table 1) - The crude protein (CP) varied from about 9% for P7211HR to 10% for other corn hybrids (7202, 39F44, 7332 and P7213R). The protein for the 5 corn hybrids appeared to be generally adequate for a dry gestating cow that requires 7% in the mid-pregnancy stage and 9% in the late pregnancy stage.

Minerals (Table 2) - Only P7211HR seemed to have sufficient Ca for a dry gestating cow (0.18% Ca). All 5 corn hybrids were able to meet the P, K and Mg requirements of a dry gestating cow, which requires 0.16% P, 0.60% K and 0.12% Mg. For the trace minerals (Table 2), only the iron (Fe) requirement of a dry gestating cow is met (50 ppm). Other trace minerals measured here (Cu, Zn and Mn) fell short of meeting the needs of a dry gestating cow.

Table 1. Plant height, moisture content, forage dry matter yield and protein for 5 corn hybrids					
Corn Hybrid	Plant height (Cm)	Moisture (%)	Forage Yield		Protein
			Wet yield (ton/acre)	DM yield (ton/acre)	CP (%)
39F44	189	57.0	13.0	5.57	10.3
7202	190	61.7	12.1	4.62	9.9
P7211HR	197	65.6	10.4	3.61	8.8
7332	168	53.1	10.1	4.81	10.3
P7213R	185	53.7	9.27	4.30	10.3

Table 2. Corn forage Minerals											
Corn Hybrid	Macro minerals							Trace minerals			
	Ca (%)	P (%)	Ca:P	K (%)	S (%)	Mg (%)	Na (%)	Cu (ug/g)	Zn (ug/g)	Fe (ug/g)	Mn (ug/g)
39F44	0.13	0.21	0.62	0.81	0.11	0.16	0.01	5.25	21.7	86.5	6.08
7202	0.14	0.22	0.64	0.86	0.09	0.13	0.01	3.75	23.1	85.0	6.69
P7211HR	0.21	0.18	1.17	0.88	0.08	0.15	0.01	4.03	19.7	105.2	9.44
7332	0.14	0.18	0.78	0.86	0.08	0.12	0.01	3.72	19.8	80.4	6.67
P7213R	0.16	0.19	0.84	0.86	0.10	0.19	0.01	3.80	24.7	84.9	6.06

Detergent Fiber and Energy - Acid Detergent Fiber (ADF) value refers to the cell wall portions of the forage that are made up of cellulose and lignin. These values are important because they relate to the ability of an animal to digest the forage. As ADF increases the ability to digest or the digestibility of the forage decreases. Neutral Detergent Fiber (NDF) value is the total cell wall which is comprised of the ADF fraction plus hemicellulose. NDF values are important because they reflect the amount of forage the animal can consume. As NDF percent increases, the DM intake generally decreases. The lower the values of ADF and NDF, the better the forage/feed. For both ADF and NDF, 39F44 had much lower values than other corn hybrids tested here.

Energy (%TDN) was generally above 65% for all corn hybrids. This shows that the different corn hybrids tested met and even exceeded the TDN requirements of mature beef cattle.

Table 3. Corn forage detergent fiber and energy values

(ADF - Acid detergent fiber, NDF– Neutral detergent fiber, TDN - total digestible nutrients, ME - metabolizable energy, NE_G– net energy for gain, NE_L– net energy for lactation, NE_M - net energy for maintenance, RFV- Relative feed value)

Corn Hybrid	Detergent Fibers		Energy				
	ADF (%)	NDF (%)	TDN (%)	NEL (Mcal/kg)	NEG (Mcal/kg)	NEM (Mcal/kg)	RFV
39F44	19.9	39.9	73.4	1.68	1.12	1.84	171
7202	22.6	42.4	71.3	1.63	1.06	1.78	156
P7211HR	29.7	53.1	65.8	1.50	0.90	1.62	115
7332	26.2	50.9	68.5	1.56	0.98	1.70	125
P7213R	25.5	43.5	69.1	1.58	0.98	1.72	148

Conclusion - Though all corn hybrids tested have similar heat units (2000-2150), 39F44, a hybrid that requires the least heat units seemed to have performed better than the other hybrids. When compared to other corn hybrids, 39F44 had slightly higher forage yields, comparable protein, good ADF and NDF values and higher RFV. Because of the general inconsistencies of any particular hybrids meeting all the minerals requirements (macro and trace), it is essential that free choice minerals be provided to cows during grazing.

Site 2 - Corn Variety Evaluation (Denis Bouvier, Guy)

Methods

Two DuPont Pioneer Roundup ready corn hybrids were seeded (P7211HR - 2050 heat units and 39D95 - 2175 heat units). Seeding was done on May 14 on 3.5 acres. Fertility was 170 lbs of NPK+S fertilizer blend. The field was sprayed twice with Roundup to control weeds, first on May 26 with 0.45 L/acre and then another one on June 25 (0.66 L/acre).

Harvesting for determination of forage yield and quality was done on October 7. About 250 cow days was obtained for the trial field.

Results

Plant height - P7211HR was taller than 39D95 (Table 1).

Moisture content at harvest was 56.4% for P7211HR and 59.6% for 39D95 (Table 1).

Forage yield (Table 1). - The forage DM yield was slightly higher for 39D95 (6.95 ton DM/acre) than P7211HR (6.22 ton DM/acre).

Forage Quality (Table 1).
The forage protein content (%CP) was slightly higher for 39D95 (8.89%) than P7211HR (7.99%). A dry gestating cow requires 7% CP in the mid-pregnancy stage and 9% in the late-pregnancy stage. This means that both corn hybrids were well within the 7-9% CP needed by a dry cow.

Table 1. Plant height, moisture content, forage dry matter yield and protein for 2 corn hybrids

Corn Hybrid	Plant height (Cm)	Moisture (%)	Forage Yield		Protein CP (%)
			Wet yield (ton/acre)	DM yield (ton/acre)	
P7211HR	213	56.4	14.3	6.22	7.99
39D95	197	59.6	17.2	6.95	8.89

For the macro-minerals measured here (Table 2), both P7211HR and 39D95 met the K and Mg requirements of a dry gestating cow. Only P7211HR had sufficient Ca for a dry gestating cow. None of the 2 corn hybrids had adequate P, S and Na for a dry gestating cow.

Of the 4 trace minerals measured here (Cu, Zn, Fe and Mn) (Table 2), only Fe requirement for a dry gestating cow was met by both corn hybrids.

39D95 appeared to have better forage quality than P7211HR because of its lower ADF and NDF content as well as its higher TDN and RFV value (Table 2). 39D95 had 71% TDN, while P7211HR had 67% TDN, indicating that both corn hybrids exceeded the energy (TDN) requirements of mature beef cattle.

Table 2. Corn forage macro and trace minerals, detergent fiber and energy contents

(*ADF - Acid detergent fiber, NDF– Neutral detergent fiber, TDN - total digestible nutrients, ME - metabolizable energy, NE_G– net energy for gain, NE_L– net energy for lactation, NE_M - net energy for maintenance, RFV- Relative feed value)*

							Trace minerals				Detergent Fibers						
Corn Hybrid	**Ca**	**P**	**K**	**S**	**Mg**	**Na**	**Cu**	**Zn**	**Fe**	**Mn**	**ADF**	**NDF**	**TDN**	**NE_L**	**NE_G**	**NE_M**	**RFV**
	(%)	**(%)**	**(%)**	**(%)**	**(%)**	**(%)**					**(%)**	**(%)**	**(%)**	**(Mcal/kg)**	**(Mcal/kg)**	**(Mcal/kg)**	
P7211HR	0.25	0.13	1.05	0.08	0.16	0.01	4.28	24.6	110	18.4	27.7	51.3	67.3	1.53	0.94	1.66	122
39D95	0.15	0.14	0.80	0.07	0.18	0.01	3.41	20.9	93	20.0	23.1	43.5	70.9	1.62	1.05	1.77	152

Conclusion - 39D95 corn hybrid appeared to have performed slightly better than P7211HR, particularly taking into consideration forage DM, protein, ADF and NDF as well as TDN and RFV contents. Both corn hybrids had comparable forage P, S and Na contents. Because of the general inconsistencies of any particular hybrids meeting all the minerals requirements (macro and trace), it is essential that free choice minerals be provided to cows during grazing.

Managing Roundup Ready Canola in Corn

Calvin Yoder[1], Akim Omokanye[2], Kim Schoorlemmer[3]
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2. Peace Country Beef and Forage Association, Fairview, AB
3. DuPont Pioneer, Rycroft, AB

Introduction

Corn acreage in the Peace River Region for livestock feed has steadily increased over the past number of years. Most of the corn seeded is Roundup Ready (RR) which provides a good system for controlling weeds. Volunteer RR canola is also a common weed on fields where corn is grown. Managing volunteer RR canola in RR corn requires a broadleaved herbicide that can be mixed with glyphosate and be safely applied prior to seeding corn or applied in-crop.

Selecting a corn herbicide should be based on weeds present, crop stage, crop tolerance and price. There are a number of broadleaved herbicides that can be tank mixed with glyphosate and used on corn as pre-seed or in-crop applications. Tank mixing a broadleaved herbicide with glyphosate will improve control of a number of weeds including volunteer RR canola. Herbicides that can be tank mixed with glyphosate and applied prior to seeding corn are Heat, Pardner, Conquor, MCPA and 2,4-D. Some herbicides that are registered on corn and can be tank mixed with glyphosate include Pardner, Buctril M, 2,4-D, MCPA, Banvel and a new herbicide Armezon. Although Banvel, 2,4-D, MCPA are registered for use on corn agronomists prefer not to recommend them as they can cause stunted growth and poor brace root development resulting in lower yields. Bromoxynil which is the main active ingredient of Pardner and tends to be safer although can cause some leaf burn.

Corn field with volunteer canola

Methods

Two trials were conducted in 2015 to evaluate several herbicide tank mixes with Roundup WeatherMax to control volunteer RR canola in field corn. One trial compared several treatments applied prior to seeding (Table 1) corn and the second trial compared treatments applied in-crop (Table 2). All treatments included in the trials are registered for use on corn. Experimental design for the Pre-Seed Herbicide trial was a randomized complete block design with three replications and plots were 2m x 7m in size. Experimental design for the In-Crop Herbicide trial was a randomized complete block design with 2 replicates. Herbicides were applied with a hand held plot sprayer, calibrated to deliver 100 l/ha of water at 270 kPa.

Pre-seed Herbicide Applications

The trial was conducted on a RR canola stubble field near Debolt. The site had uniform populations of volunteer RR canola. Herbicide treatments (Table 1) were applied on May 25th when the canola was at the 1-3 leaf stage. Corn was direct seeded into stubble through the trial area several days following the pre-seed herbicide applications. Visual weed control ratings (percent control) were conducted 22 and 35 days after application (DAA). No crop tolerance data was collected.

Table 1. Herbicide treatments applied prior to seeding corn, Debolt 2015.

TREATMENT	Formulation g/l	RATE ml/ acre	$/ACRE
Check			
Roundup WeatherMax	540	335	2.66
Heat LQ+ Roundup WeatherMax+ Merge	342 540	21 335 0.5% v/v	6.40
Heat LQ+ Roundup WeatherMax+ Merge	342 540	42 335 0.5% v/v	10.14
Pardner+ Roundup WeatherMax	280 540	400 335	9.76
MCPA Ester+ Roundup WeatherMax	600	300 335	7.66
Conquer+ Roundup WeatherMax	240+235 540	240+15 335	8.91

In-Crop Corn Herbicide Applications

This trial was conducted on a field of RR corn along Alder Ridge Rd. that had been seeded to corn for a number of years but continued to have issues with volunteer RR canola. The trial area had uniform weed populations of volunteer RR canola, wild buckwheat and lamb's-quarters. Herbicide treatments (Table 2) were applied on June 17th when the corn was in the 5-6 leaf stage. Volunteer canola was in the 3-6 leaf stage, lamb's-quarters 3-4 leaf stage and wild buckwheat at the 3-6 leaf stage. Visual weed control ratings (percent control) were conducted 26 and 41 and 56 days after application (D-A-A). No crop tolerance data was collected.

Table 2. In crop herbicide treatments applied to corn, Alder Ridge, 2015.

TREATMENT	Formulation g/l	RATE ml/ acre	$/ACRE
Check			
Roundup WeatherMax	540	335	2.60
Buctril M+ Roundup WeatherMax	280 and 280 540	400 335	10.41
Armezon Roundup WeatherMax+	336 540	15 335	12.66
Pardner+ Roundup WeatherMax	280 540	400 335	11.31
MCPA Ester 600+ Roundup WeatherMax	600	300 370	8.66
MCPA amine 500+ Roundup WeatherMax	 540	450 335	8.50

Results and Discussion

Pre-seed Herbicide Applications

Percent visual volunteer RR canola control following several pre-seed herbicide applications are shown on Table 3.

Table 3. Visual percent control ratings of volunteer Roundup Ready canola following herbicide applications prior to seeding corn, Debolt 2015.

TREATMENT	RATE ml/acre	22 D-A-A	35 D-A-A*
Check		0	0
Roundup WeatherMax	335	0	0
Heat LQ+ Roundup WeatherMax+ Merge	21 335 0.5% v/v	100	77
Heat LQ+ Roundup WeatherMax+ Merge	42 335 0.5% v/v	100	87
Pardner+ Roundup WeatherMax	400 335	100	0
MCPA Ester+ Roundup WeatherMax	300 335	100	58
Conquer+ Roundup WeatherMax	240+15 335	100	0

All pre-seed herbicide applications with the exception of Roundup WeatherMax provided excellent control of volunteer RR canola plants that were emerged at the time the herbicides were applied. Heat+Roundup WeatherMax and MCPA ester+Roundup WeatherMax provided some residual control of volunteer canola that was germinating after the application. Pardner and Conquer tank-mixed with Roundup WeatherMax provided excellent control of emerged canola but did not provide any residual activity.

In-Crop Corn Herbicide Applications

Tables 4, 5 and 6 show control of volunteer RR canola, wild buckwheat and lambs' -quarters following the application of several herbicide treatments applied in-crop on corn.

Table 4. Visual percent control ratings of volunteer Roundup Ready canola following in-crop herbicide applications to corn, Alder Ridge 2015.

TREATMENT	26 D-A-A	41 D-A-A	56 D-A-A
Check	0	0	0
Roundup WeatherMax	0	0	0
Buctril M+ Roundup WeatherMax	80	80	75
Armezon Roundup WeatherMax	100	95	95
Pardner+ Roundup WeatherMax	75	85	80
MCPA Ester 600+ Roundup WeatherMax	95	90	88
MCPA amine 500+ Roundup WeatherMax	78	70	73

Table 5. Visual percent control ratings of wild buckwheat following in-crop herbicide applications to corn, Alder Ridge 2015.

TREATMENT	26 D-A-A	41 D-A-A	56 D-A-A
Check	0	0	0
Roundup WeatherMax	70	68	60
Buctril M+ Roundup WeatherMax	75	88	85
Armezon Roundup WeatherMax+	100	98	95
Pardner+ Roundup WeatherMax	75	80	83
MCPA Ester 600+ Roundup WeatherMax	80	80	83
MCPA amine 500+ Roundup WeatherMax	85	78	70

Table 6. Visual percent control ratings of lambs'- quarters following in-crop herbicide applications to corn, Alder Ridge 2015.

TREATMENT	26 D-A-A	41 D-A-A	56 D-A-A
Check	0	0	0
Roundup WeatherMax	70	63	60
Buctril M+ Roundup WeatherMax	80	70	70
Armezon Roundup WeatherMax+	95	98	85
Pardner+ Roundup WeatherMax	75	75	83
MCPA Ester 600+ Roundup WeatherMax	83	83	83
MCPA amine 500+ Roundup WeatherMax	80	75	80

The addition of a broad-leaved herbicide to Roundup WeatherMax improved control of all volunteer RR canola, lambs'- quarters and wild buckwheat over RU WeatherMax alone particularly on RR canola. Armezon+Roundup WeatherMax showed excellent control of all three weeds. The control of wild buckwheat with Aremezon+Roundup WeatherMax was surprising as wild buckwheat is not on the Armezon label. MCPA ester+Roundup WeatherMax also showed excellent control of RR canola. Bucril M or Pardner tank mixed with Roundup provided satisfactory control of RR canola. MCPA ester+Roundup WeatherMax provided slightly better control on all three weeds than MCPA amine+Roundup WeatherMax. Buctril M and Pardner tank mixed with Roundup WeatherMax provided satisfactory lambs'-quarters and wild buckwheat.

Testing of 14 Soybean Varieties for forage

By *Akim Omokanye, PCBFA*

Soybean plants may be grazed or harvested from the flowering stage to near maturity for use as high-quality hay. Soybeans may also be grown as a silage crop in pure culture or cocktail mixtures. Soybeans are sometimes referred to as "short-day plants", as they flower in response to shortened day length. The beginning of the reproductive period with flowering and the date of maturation are affected by day length more than the actual age of the plant. Varieties differ in their response to day length. Agronomically, soybeans have the advantage of fixing nitrogen when properly inoculated, and do not require a lot of specialized equipment to grow. Crop species choice is one of the important decisions any crop producer makes. The objective of this trial was to test and select soybean varieties for forage yield and quality for livestock use based on local growing conditions.

Methods

Fourteen (14) roundup ready soybean varieties with varied heat units requirement (Table 1) were tested in a small plot field trial at the Fairview Research Farm (NW5-82-3W6) on RR #35, MD of Fairview. Prior to seeding, soil tests were carried out and we cultivated the land. A randomized complete block design (RCBD) with three (3) replications was used. Seeding rate was 55 plants/m^2 (5.1 plants/ft^2). Seed depth was 0.75-1.00". Six rows were seeded per plot using plot drill at 9" row spacing on May 22. Seed was inoculated with HiFlo® Spherical Granules at seeding. Fertility was 0 lbs/ac N, 60 lbs/ac P, 28 lbs/ac K, and 18 lbs/ac S (based on soil testing). In crop spraying was done once with Roundup.

Harvesting for wet fresh, forage dry matter (DM) and feed quality was done on August 27. Forage samples were analyzed for feed tests in a commercial laboratory (Central Testing Laboratory, Winnipeg).

Table 1. Soybean varieties & heat units

Variety	Type	CHU
TH3303	RR2Y	2400
TH32004	RR2Y	2425
TH35002	RR2Y	2375
Tierton	-	-
Moosomin	RR2Y	2300
Reston	RR2Y	2325
P002T04	RR2Y	2325
S007	RR2Y	2350
P001T34R	RR	2300
Mcleod R2	RR2Y	2375
Mammoth R2	-	-
Pekko	RR2Y	2325
Watson	RR2Y	2225
TH33005	RR2Y	2420

Results

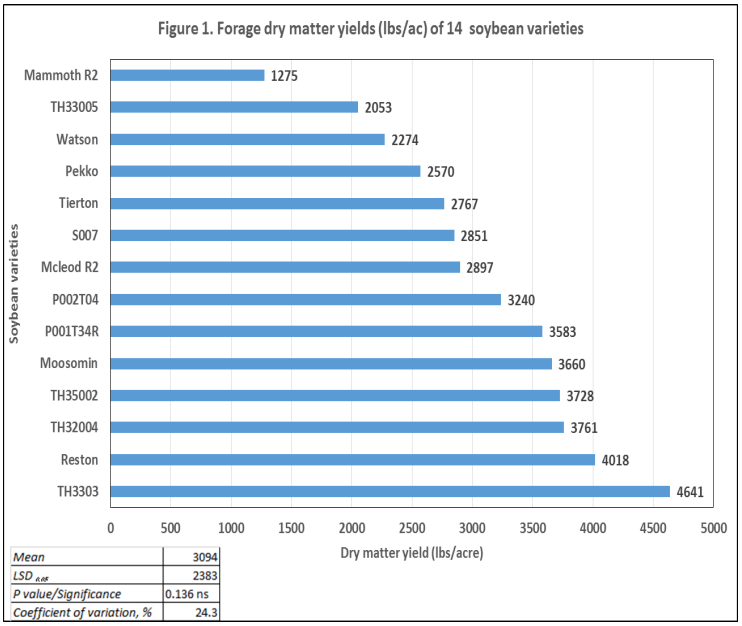
Forage dry matter (DM) yield varied from 1275 lbs DM/ac for Mammoth to 4641 lbs DM/ac for TH3303 (Figure 1). Seven of the 14 varieties had > 3000 lbs DM/ac, while the other 7 had <3000 lbs DM/ac.

The forage protein (CP) was generally >16% for all soybean varieties (Table 1). All varieties therefore far exceeded the protein requirements of mature beef cattle as well as growing and finishing calves.

The forage Ca, P, Mg & K of all varieties exceeded the Ca, P, Mg & K requirements by a dry gestating cow.

Table 2. Forage protein (CP) and macro minerals of 14 soybean varieties

	CP	Ca	P	Mg	K	Na
Variety	**%**	**%**	**%**	**%**	**%**	**%**
TH3303	19.3	1.71	0.21	0.82	0.94	0.02
TH32004	22.1	1.89	0.21	0.81	0.91	0.01
TH35002	21.8	1.67	0.26	0.81	1.01	0.01
Tierton	20.9	1.75	0.20	0.65	1.11	0.01
Moosomin	20.7	1.68	0.23	0.65	1.14	0.01
Reston	20.7	1.63	0.20	0.60	1.05	0.02
P002T04	20.8	1.65	0.23	0.68	1.00	0.01
S007	21.6	1.81	0.25	0.97	0.99	0.00
P001T34R	21.9	1.98	0.21	0.76	0.92	0.01
Mcleod R2	20.7	2.07	0.24	0.77	1.24	0.01
Mammoth R2	17.4	1.64	0.19	0.62	1.2	0.01
Pekko	17.9	1.73	0.18	0.64	0.96	0.01
Watson	16.8	1.68	0.19	0.76	1.08	0.00
TH33005	19.0	1.51	0.23	0.63	1.04	0.00



The forage energy (%TDN) was highest for TH33005 (74% TDN) and lowest for Reston (64% TDN). Generally, all varieties far exceeded the energy requirements of dry gestating cows (55% TDN at the 2nd trimester and 60% TDN at b3rd trimester). For the other forms of energy measured, TH33005 also had higher ME, NE_L, DE, NE_M and NE_G than other varieties. For a mature cow which requires 0.97-1.10 NE_M (Mcal/kg) during pregnancy and 1.19-1.28 NE_M (Mcal/kg) during lactation, all soybean varieties were well within these values.

Table 3. Forage macro and trace minerals, detergent fiber and energy contents of 14 soybean varieties

(ADF - Acid detergent fiber, TDN - total digestible nutrients, ME - metabolizable energy, NE_G – net energy for gain, NE_L – net energy for lactation, NE_M - net energy for maintenance, DE—digestible energy)

	ADF	TDN	ME	NEL	DE	NEM	NEG
Variety	**%**	**%**	**(Mcal/kg)**	**(Mcal/kg)**	**(Mcal/kg)**	**(Mcal/kg)**	**(Mcal/kg)**
TH3303	31.6	64.9	2.37	1.47	2.86	1.49	0.90
TH32004	31.0	65.5	2.40	1.49	2.89	1.52	0.92
TH35002	28.0	68.8	2.51	1.57	3.03	1.62	1.01
Tierton	30.6	66.0	2.42	1.50	2.91	1.54	0.94
Moosomin	29.6	67.0	2.45	1.52	2.95	1.56	0.96
Reston	32.1	64.4	2.36	1.46	2.84	1.48	0.89
P002T04	28.7	68.0	2.49	1.55	3.00	1.60	1.00
S007	27.8	68.9	2.52	1.57	3.04	1.62	1.02
P001T34R	30.3	66.3	2.42	1.51	2.92	1.54	0.94
Mcleod R2	30.0	66.6	2.44	1.52	2.94	1.55	0.96
Mammoth R2	30.2	66.4	2.43	1.51	2.93	1.54	0.95
Pekko	28.0	68.8	2.51	1.57	3.03	1.62	1.01
Watson	28.1	68.6	2.51	1.56	3.02	1.62	1.01
TH33005	23.1	73.9	2.71	1.69	3.26	1.79	1.16

Conclusion - The trial site (Fairview) and area in 2015 was dry and so the soybeans did not grow well. But looking at the forage DM yield for Reston and TH3303, which had up to 2.0 tons DM/ac and the ability for all varieties to meet the protein, minerals (except for Na) and energy requirements of a mature, it shows that some soybean varieties have potential in the Peace.

2015 Peace River Country Forage/Feed Quality Survey Summary

By *Akim Omokanye, PCBFA*

When faced with a shortage of feed in a year like 2015, producers may have to use feeds which they normally would not rely on. It is important that you plan your rations so that the nutrients short in one feedstuff are either high in another or added as a supplement. CowBytes is an easy-to-use beef ration balancing software package that you can use once you have your feed tests done. Using SheepBytes (for sheep) you can also formulate rations for sheep for different animal types (mature ewes and rams, replacement ewe lambs and ram lambs, early weaned lambs, growing lambs and finishing lambs). PCBFA's services to producers include feed testing, analysis and interpretation of results. This report looks at the 2015 forage type feed tests in the Peace. The results are discussed in relation to the nutrient requirements of mature beef cattle.

Methods

From July 2015 to January 2016, a total of 241 forage type feed samples from producers in the Peace were analyzed for quality. Most of the feed samples were analyzed by Central Testing Laboratory (Winnipeg) and a few corn forage samples was analyzed by A&L Canada Laboratories Inc. (London, Ontario) using standard laboratory procedures for wet chemistry or Near-infrared reflectance (NIR) spectroscopy. The samples were grouped by feed type into 15 groups (Table 1).

Results

Categories of Forage Types

Table 1 shows the different forage type feed samples analyzed for beef cattle in the Peace this year. The top 4 forage feed types are in the order of Grass-Legume mix hay > Standing corn > Straight Grass hay > Greenfeed. These 4 forage feed types constituted about 72% of the total samples analyzed. Ninety one (91) Grass-Legume mix hay samples were analyzed, making grass-legume mix hay the most submitted forage feed type. The least submitted samples came from 2nd Cut Grass-Legume mix hay, Swamp Hay, Canola straw and 2nd Cut Legume hay, each forage type constituting 1-2 samples (0.41-0.83%).

Table 1. Different forage feed types analyzed for quality in the Peace in 2015

Forage feed type	No. of samples	% of total samples	Protein (CP, % DM basis)		Energy (TDN, % DM basis)	
			Mean	Range	Mean	Range
Straight Grass hay	20	8.30	8.72	5.67-11.4	53.9	40.8-61.4
Straight Legume hay	9	3.73	12.20	9.54-14.6	53.7	56.3-59.1
2nd Cut Legume hay	2	0.83	15.30	13.9-16.8	54.6	54.3-55.0
Grass-Legume mix hay	91	37.8	10.50	5.27-19.4	55.1	43.0-63.9
2nd Cut Grass-Legume mix hay	1	0.41	15.30	15.3	56.6	56.3
Greenfeed	19	7.88	9.86	6.12-13.0	60.8	47.5-67.9
Silage	15	6.22	11.40	7.12-14.7	59.5	52.0-64.5
Standing corn	43	17.8	11.00	7.81-13.6	67.1	63.1-79.2
Cover crop cocktail mix	7	2.90	14.20	11-20.1	65.1	62.3-73.7
Grain	7	2.90	11.10	8.59-14.1	76.3	72.0-84.6
Swamp Hay	1	0.41	9.51	9.51	53.8	53.8
Grass aftermath	8	3.32	7.01	5.02-11.3	47.9	43.1-54.3
Pea straw	11	4.56	6.56	4.48-10.1	37.6	35.7-41.0
Cereal straw	6	2.49	6.44	5.64-9.25	47.9	36.2-63.0
Canola straw	1	0.41	4.31	4.31	37.1	37.1

Forage Quality

Table 3 shows suggested nutrients requirements for beef cows according to NRC (2000) and AAF (2004).

Protein - Eight (8) of the 15 forage feed types had an average of 11% protein or more. The top 4 with mean protein varying from 12-15% CP are in the order of: 2nd Cut Legume hay > 2nd Cut Grass-Legume mix hay > cover crop cocktail mixture > straight legume. Only 3 of the 15 forage feed types fell short of meeting the protein requirements of mature beef cattle. The Grass aftermath was only able to meet the 7% requirement of a cow that is in the 2nd trimester. The mean protein of other forage feed types were mostly adequate (in some cases exceeding 11% CP) for mature beef cattle.

Looking at the protein range values, all samples from 2nd cut legume hay and cover crop cocktail mix conveniently and consistently met and even exceeded the protein requirements of mature beef cattle. The protein range values of Straight Legume hay, Greenfeed, Silage, Standing corn and Grain were well within the 7-11% protein requirements for mature beef cattle.

Energy - The energy (%TDN) requirements of mature beef cattle are 55% in the 2nd trimester, 60% in the 3rd trimester and 65% during lactation. Only 3 (Standing corn, Cover crop cocktail mix and Grain) of the 15 forage feed types examined had mean %TDN which exceeded the %TDN needed by mature beef cow, while both Greenfeed and Silage only had enough energy for a dry gestating cow. Others forage feed types had mean values which mostly fell short of meeting the 55% needed by a pregnant cow in the 2nd trimester. On a general note, Standing corn, Cover crop cocktail mix and Grain had TDN values which were well within those required by mature beef cattle as well as growing and finishing calves.

Macro-Minerals- The Ca content was highest for 2nd Cut Legume hay (2.00% Ca), followed by 2nd Cut Grass-Legume mix hay (1.88% Ca) and then Pea straw (1.66% Ca). Generally, Standing corn, Silage and Grain had more P content (21-25% P) than other forage feed types (0.07-0.19% P). Pea straw had the most Mg content (0.43% Mg), followed by Cover crop cocktail mix (0.30% Mg) and then both Straight Legume hay & Standing corn (0.27% Mg). The K content for all forage feed types was mostly above 1.00% and the K content was highest for Silage.

A dry gestating cow requires 0.18% Ca, 0.16% P, 0.12% Mg and 0.60% K. From the feed analysis carried out this year, only 6 forage feed types (straight legume, 2nd cut legume hay, cover crop cocktail mix, greenfeed, standing corn and silage) were able to consistently meet Ca, P, Mg and K requirements of a dry gestating cow at once. Other forage types were not consistent in meeting the requirements for these minerals. Except for grain, all forage feed types exceeded the Ca requirements of a dry gestating cow and most cases, were also able to meet the Ca needed by a lactating cow.

NE_M - The net energy for maintenance (NE_M) was mostly above 1.00 Mcal/kg for all forage feed types, both Pea straw and Canola straw being the only exceptions with 0.79-0.81 Mcal/kg NE_M. A dry gestating cow requires 0.97-1.10 Mcal/kg NE_M and a lactating cow requires 1.19-1.28 Mcal/kg NE_M. Growing and finishing calves require 1.08-2.29 Mcal/kg NE_M. Looking at the individual NE_M values in Table 2, only all the straw and aftermath forage feed types (Cereal straw, Pea straw, Canola straw and Grass aftermath) have failed to meet the NE_M requirements of mature beef cattle as well as growing and finishing calves.

NE_G - Growing and finishing calves require 0.53-1.37 Mcal/kg NE_G. All forage feed types (except for Cereal straw, Pea straw, Canola straw, Grass aftermath) were within the suggested 0.53-1.37 Mcal/kg NE_G for calves.

Table2. Minerals, ADF & other forms of energy for different forage type feeds in the Peace in 2015
(ADF - Acid detergent fiber, NDF– Neutral detergent fiber, TDN - total digestible nutrients, ME - metabolizable energy, NE_G – net energy for gain, NE_L – net energy for lactation, NE_M - net energy for maintenance, RFV- Relative feed value)

	Macro minerals					Fiber	Other forms of energy				
	Ca	P	Ca:P	Mg	K	ADF	ME	DE	NEL	NEM	NEG
Forage feed type	%	%		%	%	%	Mcal/kg				
Straight Grass	0.45	0.12	4.15	0.15	1.35	41.9	1.97	2.38	1.20	1.12	0.56
Straight Legume	1.21	0.18	7.39	0.27	1.80	42.1	1.96	2.36	1.20	1.12	0.56
Legume 2nd Cut	2.00	0.17	12.2	0.26	1.93	41.2	2.00	2.41	1.22	1.15	0.59
Grass-Legume mix	0.82	0.15	6.06	0.20	1.52	40.7	2.02	2.43	1.23	1.17	0.61
Grass-Legume mix 2nd Cut	1.88	0.15	12.5	0.20	1.87	39.3	2.08	2.50	1.27	1.23	0.66
Cover crop cocktail mix	0.67	0.19	3.67	0.30	1.83	31.4	2.39	2.87	1.48	1.50	0.91
Greenfeed	0.47	0.19	2.74	0.21	1.88	35.4	2.22	2.68	1.37	1.36	0.78
Standing corn	0.29	0.21	1.43	0.27	1.16	28.5	2.46	3.04	1.54	1.61	0.97
Silage	0.76	0.25	3.35	0.29	1.98	36.6	2.18	2.63	1.34	1.31	0.74
Grain	0.10	0.24	0.50	0.14	0.47	19.6	2.70	3.25	1.69	1.77	1.15
Cereal straw	0.41	0.10	4.41	0.12	1.35	47.5	1.75	2.11	1.06	0.91	0.44
Pea straw	1.66	0.07	29.7	0.43	1.23	57.1	1.38	1.66	0.81	0.53	0.06
Canola straw	0.79	0.15	5.27	0.20	0.99	57.6	1.36	1.64	0.79	0.51	
Swamp Hay	0.41	0.15	2.73	0.10	1.36	41.9	1.97	2.37	1.20	1.12	0.57
Grass aftermath	0.31	0.10	3.17	0.13	1.58	47.5	1.76	2.12	1.06	0.91	0.37

Table 3. Suggested nutrients requirements for beef cows from NRC (2000) and AF (2004)

Nutrient	Requirement		
	Growing & finishing calves	Dry Gestating cows (544 kg)	Lactating cows (544 kg)
Protein			
CP, %	12-13	7-9*	11
Macro-minerals			
Ca, %	0.31	0.18	0.42
P, %	0.21	0.16	0.26
Mg, %	0.10	0.12	0.20
K, %	0.60	0.60	0.70
Na, %	0.06-0.08	0.06-0.08	0.10
S, %	0.15	0.15	0.15
Trace-minerals			
Cu, ppm	10	10	10
Zn, ppm	30	30	30
Fe, ppm	50	50	50
Mn, ppm	20	40	40
Energy			
NE_M, MCal kg^{-1}	1.08-2.29	0.97-1.10	1.19-1.28
NE_G, MCal kg^{-1}	0.53-1.37	NA[Y]	NA
TDN, %	65-70[W]	55,60[Z]	65

*, 7% for middle 1/3 of pregnancy, 9% for late 1/3 of pregnancy.
[Z], 55% for middle 1/3 of pregnancy, 60% for late 1/3 of pregnancy.
[Y], NA, not available.
[W], for 6-10 months old growing bulls.

Conclusion - Cover crop cocktail mix and standing corn had higher energy (%TDN) and better ADF values than other forage feed types (grain not included). Both forage feed types also had comparable forage mineral contents to most forage feed types. Using pea straw, cereal straw, canola straw and grass straw for beef cattle would always require some form of protein, energy and mineral supplementation, as these forage feed types were consistently not able to meet the nutritional requirements of a dry gestating cow. Surprisingly, Grass aftermath had better quality than other straws (even peas), especially in terms of protein and energy.

Progress on ASB Nutrient Budget and Dugout Testing Project (2015)

By *Akim Omokanye, PCBFA*

The PCBFA has been actively involved in the facilitation and delivery of the ASB Environmental Stream Funding project for Big Lakes County, Clear Hills County, MD of Fairview, MD of Peace, MD of Spirit River, Saddle Hills County and Birch Hills County since 2010. The current ASB Environmental Stream (2014-2016) program plans to build on the previous program by including some similar events, but linking the environmental goals as an integrated resource management system. The 2014-2016 activities include research and introducing strategies that assist producers with nutrient management in areas where water quality can be impacted, through use of self-assessment tools, proper grazing and cropping practices with an economic benefit. In 2014, PCBFA identified 6 livestock and cropping operations across the Peace Country for the project. Baseline and subsequent yearly data on water and soil were collected from these sites for the purpose of developing farm nutrient maps and budgets. The *goal is to d*ecrease water body/source and riparian area contamination in the Peace Country by creating awareness of nutrients, nutrient distribution, collection and management on farm from wintering sites to pastures and crop land. This report presents the progress on the work done so far and the plans for the future (2016).

Methods:

PCBFA is working with 6 livestock and cropping operations for this project (Table 1). For each site, 5-25 acres are being used for the studies. Baseline data collection was done in 2014, so this year (2015) is the second year of the project. Baseline and subsequent data collection include the following for each project site (or selected production system):

- Soil nutrients & nutrient leaching in 0 to 24 inches soil depths
- Soil temperature and Water infiltration in 0 to 6 inches soil depth
- Soil compaction reading with a digital penetrometer in 0 to 6 inches soil depth
- Water sampling from on site dugout for water quality issues

Soil sampling - for both bale grazing and bale processing, soil sampling was done within the areas where bales have been fed. Soil sample frequency ranged from taking 2 to 3 samples in 0.5 acre units of the field.

Both soil & water samples were submitted to Exova Edmonton for analyses using standard laboratory procedures. Water samples were also analyzed by Exova for water quality using stand laboratory methods provided by the American Public Health Association Standard Methods for the Examination of Water and Wastewater.

Soil particle size analysis carried out in 2014 showed that the soil texture of the sites used was mostly silt clay (Table 2).

Table 1. Collaborating producers and production systems being investigated from 2014-2016

MD/County	Collaborating Producer	Production System Being examined
Fairview	Chris Roy (Site 1)	Winter pen
Spirit River	Soames Smith (Site 2)	Pasture
Saddle Hills County	Conrad Dolen (Site 3)	Bale grazing
Clear Hills County	Murray Lewis (Site 4)	Grain production- Canola in 2014, Wheat in 2015
Big Lakes	Kevin Meneice (Site 5)	Swath grazing
	Garrett Zahacy (Site 6)	Grain production (Grain-feed production)- Canola in 2014, silage corn in 2015

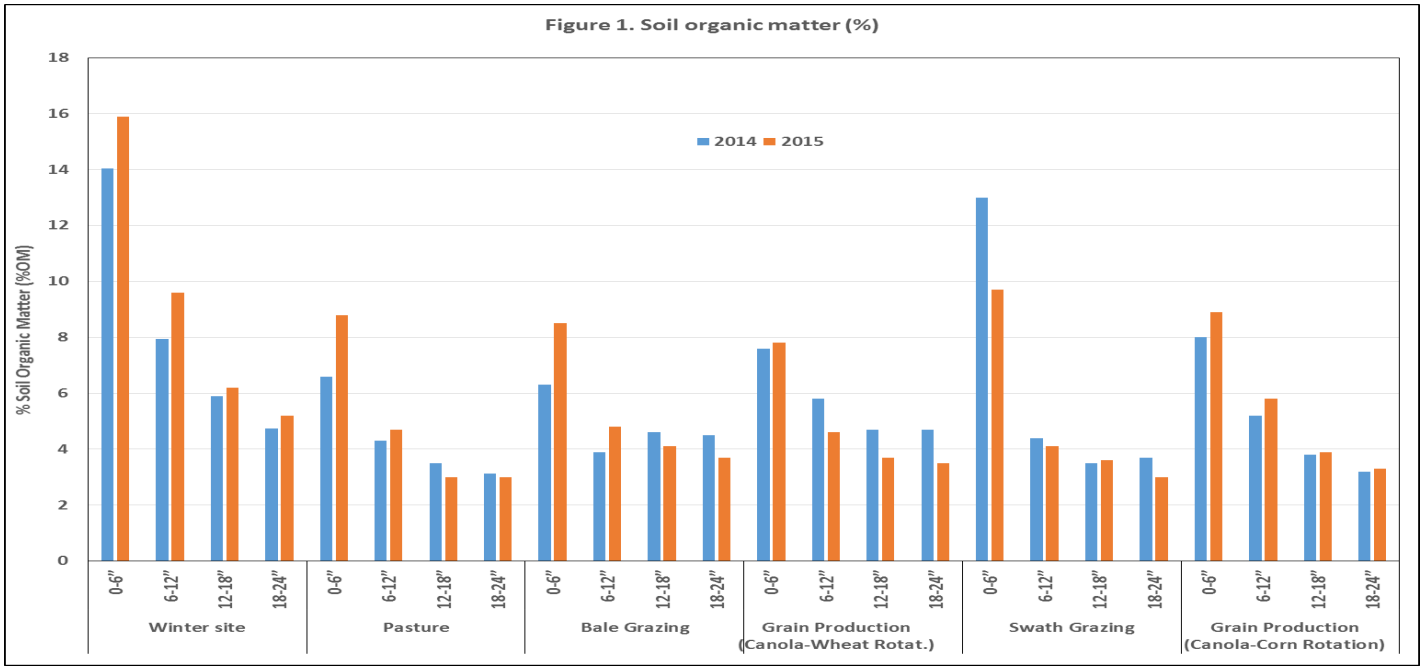
Table 2. Soil particle size analysis from the soil surface (0-6”) in 2014				
		Sand	Silt	Clay
Site	Soil texture	%	%	%
Chris Roy (Site 1)	Silt clay	10.6	47.5	42.0
Soames Smith (Site 2)	Silt clay	8.4	53.0	38.6
Conrad Dolen (Site 3)	Silt clay	15.7	54.0	30.4
Murray Lewis (Site 4)	Clay	11.4	38.2	50.4
Kevin Meneice (Site 5)	Silt clay	24.4	47.8	27.8
Garrett Zahacy (Site 6)	Silt clay	18.0	42.0	40.0

Results

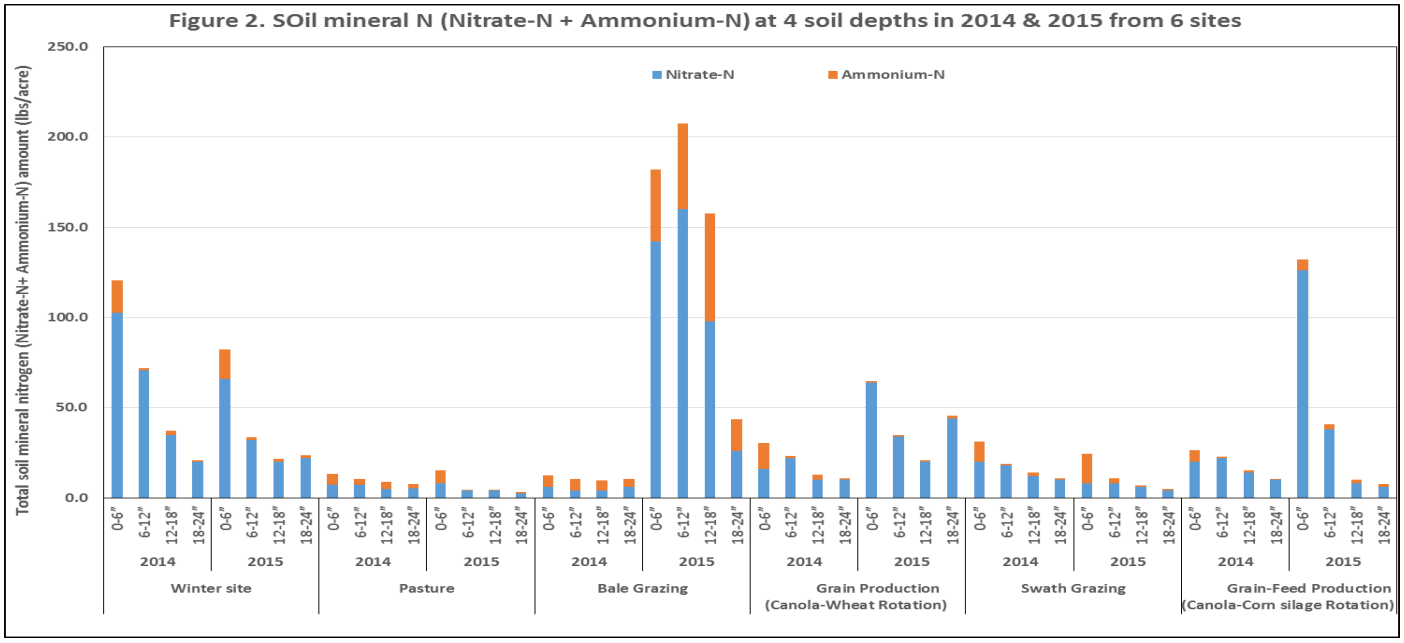
Soil organic matter (SOM) (Figure 1) - In 2015, at the 0-6” soil depth, SOM was highest for the wintering site (15.9% SOM) and lowest for grain production site (7.8% SOM). Generally, SOM was higher for the wintering site than other sites at each sampled depth (0-6, 6-12, 12-18 & 18-24”). Also, in 2015 the average SOM over the 4 soil depths was highest for the wintering site (9.2% OM) and lowest for both pasture and grain production at Cleardale (4.9% OM). Except for the swath grazing site, other sites appeared to have a slight increase in SOM in 2015 over 2014. One would expect an increase in SOM for the swath grazing site in 2015 over 2014 instead of a decrease, but what is responsible for the lack of increase in SOM is difficult to explain.

Soil OM is a measure of the amount of plant and animal residue in the soil, by percent weight. Soil OM is the primary food source for microbes and other lifeforms in the soil. It acts like a nutrient bank account, as it slowly releases crop available nutrients to the soil over time as it degrades. Soil OM contributes to the cation exchange capacity of the soil and also improves soil structure and water infiltration. Typical SOM in Alberta can range any where from 2-10%.

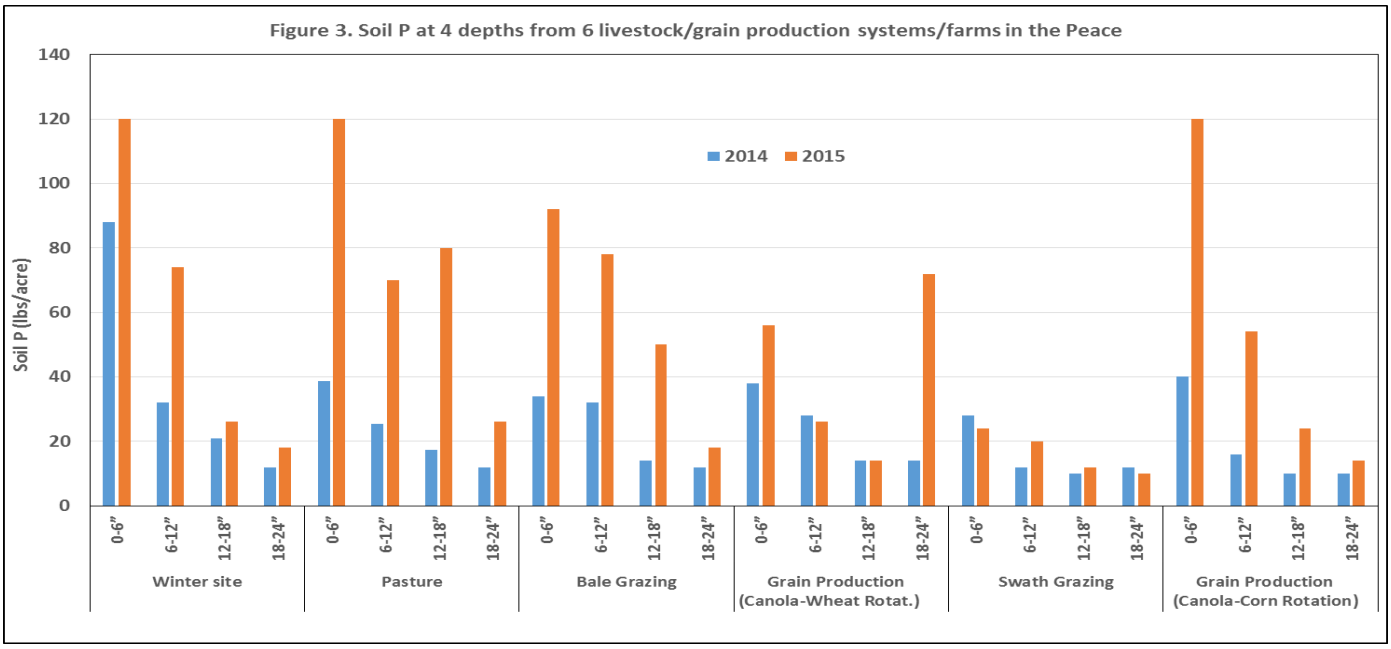
It very important that producers know that for every even fraction of OM built, there will be more water holding capacity. Research studies have shown that every 2% OM will hold 32,000 gallons of water (or 21% of a 5.5 inch rain). Every 5% OM will hold 80,000 gallons (or 53% of a 5.5 inch rain) and every 8% OM will hold 128,000 gallons of water (or 85% of a 5.5 inch rain).



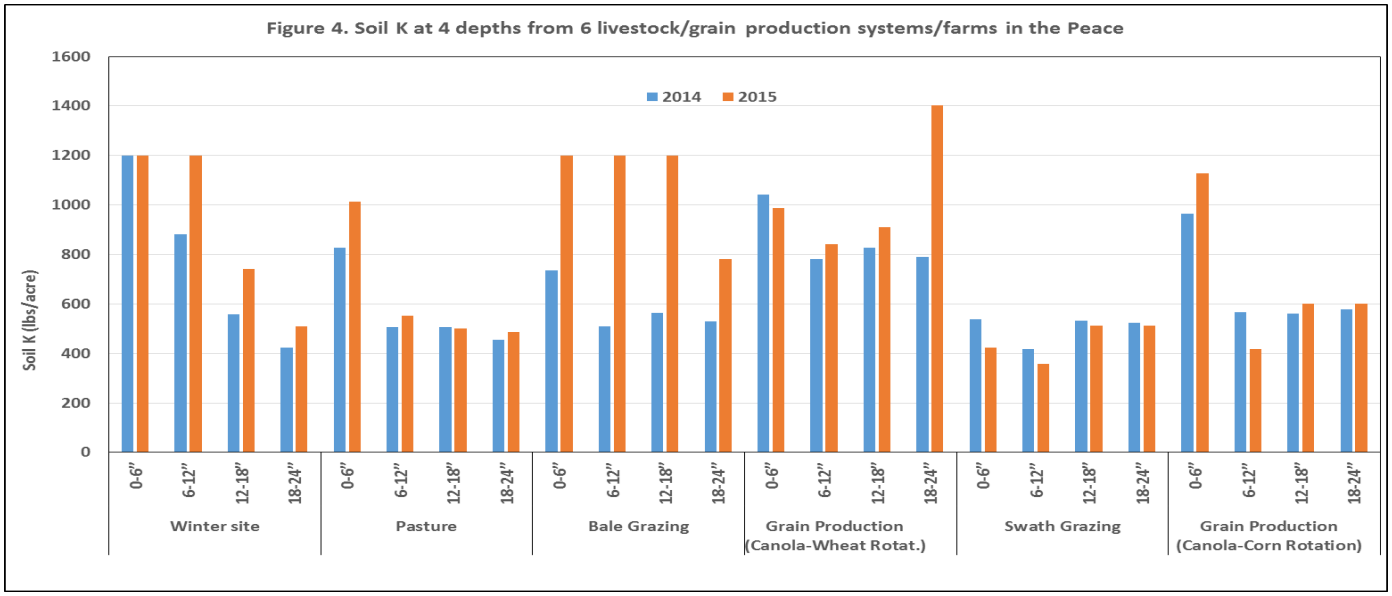
Soil mineral N (SMN), which is composed of nitrate-N + ammonium-N is shown in Figure 2. Nitrogen is available (soluble N) to plants as either ammonium (NH_4^+-N) or nitrate (NO_3^--N) and comprises only 2–3 % of the total soil nitrogen. Both NH_4^+-N and nitrate NO_3^--N are called the mineral nitrogen fraction. In 2015, bale grazing significantly had higher SMN at each sampled depth (0-6, 6-12, 12-18 & 18-24") than other sites. In 2015, the SMN at 0-6" was 182 lbs/acre for bale grazing site compared to 82, 15, 65, 24 and 132 lbs/acre respectively for winter, pasture, grain production, swath grazing and grain-feed production sites. In both years (2014 & 2015), the SMN at each soil depth is largely made up of soil nitrate-N. The significant increase in SMN for grain-feed production site in 2015 over 2014 particularly from 0-6" and 6-12" soil depths resulted from the spreading of manure in 2015 just before we soil sampled the site.



Soil P (Figure 3) - Except on a few occasions, soil P at each depth was higher in 2015 than 2014 for all sites. Soil P mostly decreased with increased soil depth. Soil P was highest at 0-6" depth for winter, pasture and grain-production (grain-feed production) (120 lbs P/acre). Pasture and bale sites generally appeared to have higher soil P than other sites.

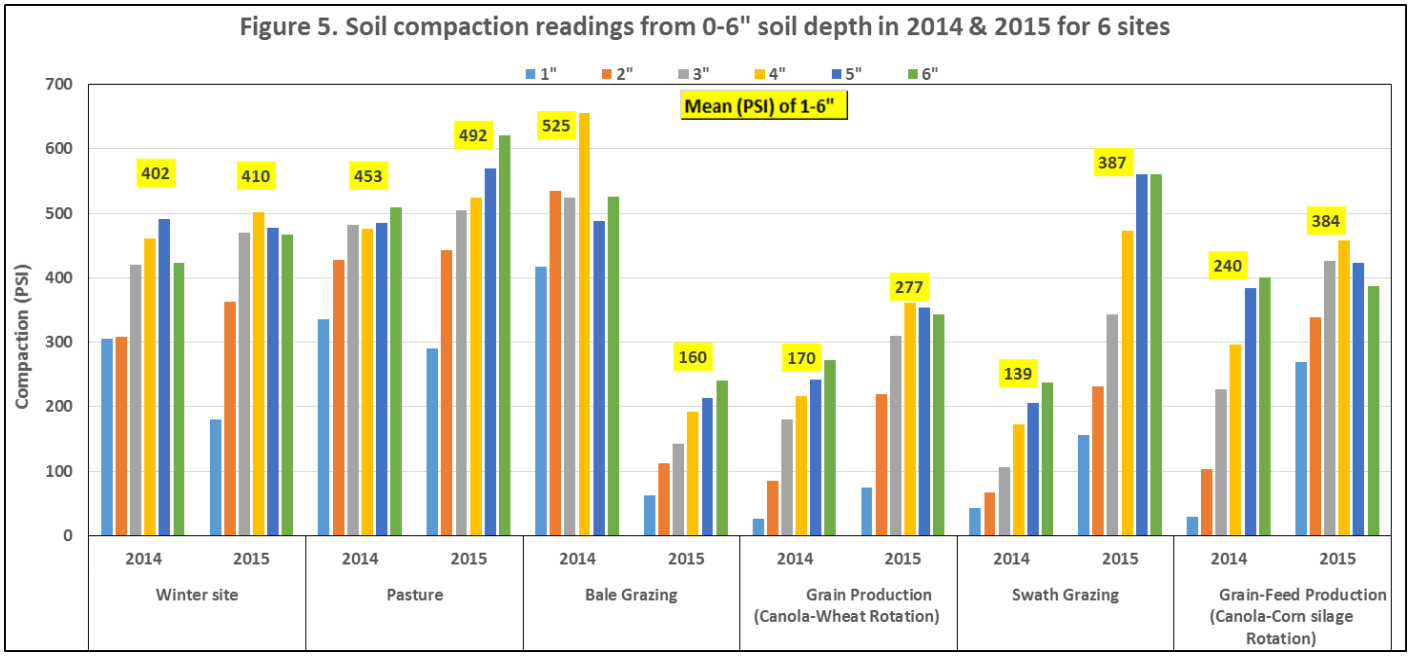


Soil K (Figure 4) - Soil K was mostly higher in 2015 than 2014 for most depths and sites. At the 0-6" depth, soil K was higher for both winter and bale grazing sites than other sites. Only the bale grazing site showed a significant increase in soil K in 2015 over 2014. For the grain production site in Cleardale, the 18-24" soil depth particularly showed a significant increase soil in 2015 over 2014, with a difference of 58 lbs K/acre between the 2 years.



Soil compaction (Figure 5) - Compaction can be a serious and unnecessary form of soil degradation that can result in increased soil erosion and decreased crop production. Compaction of soil is the compression of soil particles into a smaller volume, which reduces the size of pore space available for air and water. Soil compaction can impair water infiltration into soil, root penetration and crop nutrient and water uptake, all of which result in depressed crop yield. Readings of 400 to 500 psi would indicate potential soil compaction.

The initial compaction readings taken in 2014 as well as readings taken in 2015 showed that winter, pasture and the site which was to be bale grazed in winter of 2014/2015 (bale grazing site) appeared to have higher soil compaction readings (>400 PSI) than swath grazing, grain production and grain-feed production sites (with <400 PSI). But in 2015, following bale grazing, the bale gazing site had significant reduction in soil com-



Dugout Water Quality Assessments for Livestock Use (Table 4)

The results for dugout water samples taken for water quality were assessed for pH, calcium (ca), total dissolved solids (TDS), and nitrates and nitrites, sodium (Na), iron (Fe) etc. according to Agriculture & Forestry "Rural Water Quality Information Tool", which is available on: http://www.agric.gov.ab.ca/app84/rwqit

Total Dissolved Solids - TDS is the main indicator whether mineral levels will be a problem. The tests for 2015 for this project showed that TDS varied from 204 - 856 mg/l in the dugouts sampled. The TDS levels obtained are acceptable for cattle and horse consumption. The guideline for TDS in water used for livestock /poultry watering should not exceed 3000 mg/l.

Alkalinity - The alkalinity level for each dugout sampled is acceptable for cattle and horses. Alkalinity refers to the buffering capacity of water and is related to the concentration of carbonates and bi-carbonates.

Ca - Drinking water for livestock should not contain more than 1000 mg/l of calcium. The calcium levels for all dugouts sampled are acceptable for consumption by cattle and horses.

Chloride - The chloride levels for all dugout water samples are acceptable for cattle and horses. Chloride contributes to total dissolved solids (TDS) and with levels approaching 2000 mg/l, guidelines for TDS will dictate (See TDS).

Hardness - The hardness level for the six dugouts is viewed as acceptable for livestock watering.

Fe - The iron levels for all dugout water samples are acceptable for livestock consumption. Iron levels above 0.3 mg/l will cause precipitation in pipelines, rust colored staining of plumbing fixtures and livestock waterers. Iron levels greater than 0.3 mg/l may affect taste in veal.

Table 4. Microbial and routine water analysis of dugouts from 6 sites in 2015

Analyte	Units	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6
Microbiological Analysis							
Total Coliforms	CFU/100 mL	78	31	1	<1	79000	
Escherichia coli	CFU/100 mL	78	5	1	<1	>6000	
Routine water test							
pH		8.00	8.43	7.97	8.65	7.95	8.54
Electrical Conductivity	uS/cm at 25 C	1520	382	508	368	841	1220
Calcium	mg/L	57.4	23.6	41.3	29.1	63.7	64.0
Magnesium	mg/L	23.8	25.5	20.8	22.3	23.0	34.0
Sodium	mg/L	116	9.4	8.2	10.5	74.6	176
Potassium	mg/L	134	14.9	47.6	6.4	24.6	16.0
Iron	mg/L	0.94	0.03	0.11	0.01	0.04	<0.01
Manganese	mg/L	0.507	0.020	0.158	<0.005	0.858	<0.005
Chloride	mg/L	249	10.1	16.1	1.2	29.3	10.2
Nitrate-N	mg/L	<0.01	<0.01	0.10	<0.01	<0.01	<0.01
Nitrite-N	mg/L	<0.005	<0.005	0.015	<0.005	<0.005	<0.005
Nitrate & Nitrite-N	mg/L	<0.01	<0.01	0.12	<0.01	<0.01	<0.01
Sulfate (SO4)	mg/L	6.2	6.8	7.7	61.2	96.5	402
Hydroxide	mg/L	<5	<5	<5	<5	<5	<5
Carbonate	mg/L	<6	<6	<6	8	<6	13
Bicarbonate	mg/L	451	232	299	143	353	287
P-Alkalinity	mg/L	<5	<5	<5	7	<5	10
T-Alkalinity	mg/L	378	190	246	131	290	256
Total Dissolved Solids	mg/L	813	204	289	209	485	856
Hardness	mg/L	242	164	189	164	254	300
Ionic Balance	%	90	96	97	100	104	102

Nitrate & Nitrite - The nitrate (N) + Nitrite (N) levels in the dugouts are acceptable for cattle and horses assuming the contribution from feed is insignificant. If the feed contains nitrate, the guideline should be revised downward. Nitrate is converted to nitrite in the body. The concentration of nitrate plus nitrite as nitrogen should not exceed 100 mg/l guideline. The concentration of nitrite alone should not exceed 10 mg/l guideline.

Nitrite - According to federal guidelines the concentration of nitrite alone should not exceed 10 mg/l (N). The nitrite levels in all the dugouts sampled are acceptable for cattle and horses. Caution is needed to differentiate between nitrite and nitrite-N or nitrate as N. Nitrite = Nitrite-N x 3.0

pH - The pH levels from the 6 dugouts are within tolerable levels for livestock drinking water. PH is a measure of how acidic and/or alkaline the water is. Alkalosis, reduced productivity and Vitamin B deficiency may occur at pH > 8.3. Water with a pH less than 5.5 may cause acidosis in cattle, leading to reduced feed intake and performance. Excessive alkalinity (pH approx. 10) can cause physiological and digestive upset in livestock. Alkalinity can also increase the laxative effects of water with high sulfate levels.

Na - The Sodium levels from the 6 dugouts are acceptable for cattle and horses, as they consume a considerable amount of sodium in their diets from salt added to their feed supplies.

A Progress Report on On-farm evaluation of forage-stand rejuvenation methods to determine the most effective and profitable methods for northern Alberta producers

Collaborators: Soames Smith (Rycroft) & Bill Smith (Grovedale)

Funding Received from: Alberta Crop Industry Development Fund (ACIDF)

By *Akim Omokanye, PCBFA*

Producers' questions in the Peace on forage-stand rejuvenation methods always include: How much more forage does a reseed produce? How will I gain from forage stand rejuvenation? Where will I see the benefits? What reseeding methods or seeding equipment should I use? How can I reduce soil compaction and improve water infiltration? Can I seed in fall instead of spring? Are there studies comparing emerging new ideas of methods of rejuvenation to already established methods? To answer these questions, this project seeks to examine a dozen methods of rejuvenation of depleted forage stands at two locations in the Peace.

The key results of the project will include how to increase economic returns, how to improve forage quality and how to manage degraded soil with minimal environmental effects. The project is aimed at providing producers with a practical look at potential options and methods to improve the productivity of older forage stands. The different methods will be evaluated using the systems approach, which will examine individual production components (soil & environment, forage, livestock, and economics-cost/benefit analysis) and how these components interact.

Renovation treatment method –Plow under and reseed, Rycroft

Renovation treatment method–Seeding in progress, Grovedale

This project is being carried out on-farm on two different beef cattle production systems (pasture versus hay). Site 1 is at Uddersmith Dairy- Soames Smith, near Rycroft. Site 2 is at Bill Smith's in Grovedale.

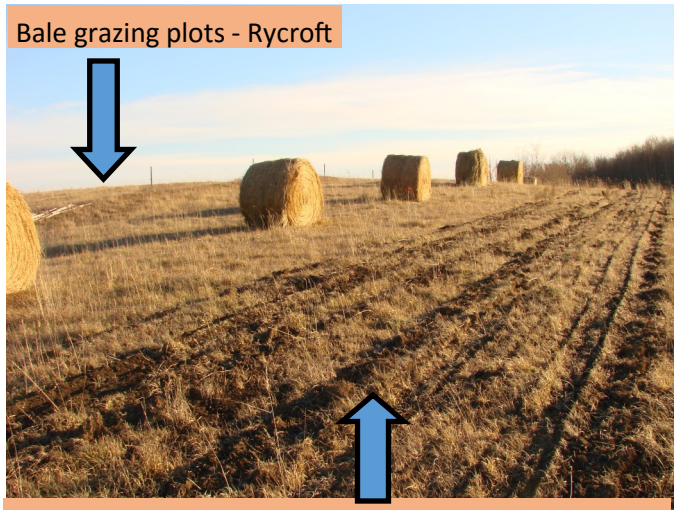
The tests were established using a Randomized Complete Block Design (RCBD) with three (3) replications at each site. Each site has twelve (12) common treatments. The hay site, a conventional beef cattle farm has an additional treatment (13th treatment) where a dry inorganic fertilizer following soil tests was applied. Each treatment plot is about 0.25 acres in size making it approximately 10 acres (including gaps between treatment plots and replicates) per site.

Spring sod seeding with Agrowplow drill treatment–Rycroft

The treatments being evaluated are:

1. Control check strip (only to be grazed or hayed following the producers' usual practice)
2. Sub-soil to a depth of 12" soil depth with an Agrowplow subsoiler in the fall
3. Spread beef cattle manure & then sub-soil to 12" soil depth with an Agrowplow subsoiler in the fall
4. Summer sod-seeding of tillage radish seed (last week in July/first week in August)
5. Spring sod-seeding with an Agrowplow no-till seed drill of forage mixture
6. Spring sod-seeding with a conventional no-till seed drill of forage mixture
7. Summer pasture rest (no grazing or haying at all in the summer)
8. Pasture renewal - break the existing pasture or hay field (plow under) and then reseed with forage mixture
9. Fall/frost sod-seeding with an Agrowplow no-till seed drill of forage mixture
10. Fall/frost sod-seeding with a conventional no-till drill of perennial forage mixture
11. High stock density grazing in the summer to create a mob grazing effect
12. Bale grazing in winter
13. Dry fertilizer application (only one site)

Spread manure & then sub-soil to 12" treatment - Rycroft



Manured + Sub-soiled plot - Rycroft

Prior to any treatment implementation this year and for baseline data, we took soil samples for soil nutrients and quality at 0-6, 6-12, 12-18 and 18-24" soil depths. We also determined forage yield and quality, plant composition/proportion, and took soil compaction readings as well as water infiltration rate. Establishment success will be determined by observing unseeded treatment compared to seeded area for plant counts, DM yield and forage quality over 3-years.

A Progress Report on Pasture rejuvenation with sainfoin & cicer milkvetch varieties

Collaborator: Dr. Surya Acharya, *Agriculture and Agri-Food Canada*, *Lethbridge*
By *Akim Omokanye, PCBFA*

Rejuvenation is a complex and costly challenge for producers. With the high cost and time associated with forage stand termination and re-establishment, farmers are anxious to identify all options for sustaining a forage stand. There is indication that grazing is still the cheapest way to raise beef cattle. However, over time, the productivity and livestock carrying capacity of seeded hay fields and pastures on beef cattle operations may decline, largely a result of reduced stand vigor, consequence of drought, pests, weeds, the invasion of unpalatable or less productive species, overgrazing, and poor soil fertility. With this project, we want to determine if sainfoin or CMV populations can be established in alfalfa and mixed stand pastures in Alberta. For quick adoption of this technology, we also need to know and demonstrate plant productivity of the rejuvenated pastures and change in nutrients status of the soil over years including carbon sequestration.

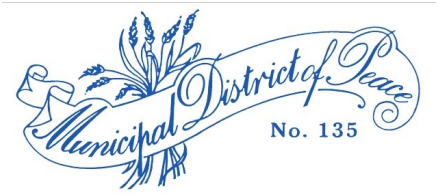
For this project, an old alfalfa stand was chosen at the Fairview Research Farm. In 2015, four sainfoin populations (new cultivar Mountainview, Nova check cultivar, and 2 other new populations) and 3 cicer milkvetch cultivars (Oxley, AC Oxley II and AC Veldt) were seeded into the old alfalfa stands. Unseeded plots are being used as checks. Two types of drills were used to seed both sainfoin and cicer milkvetch in the alfalfa stands. We used an Agrowplow no-till seed drill and a double-disc plot-drill. Seeding was done on June 8, 2015. One treatment was ploughed under and seeded to wheat in 2015, but in 2016, this will be seeded to sainfoin-alfalfa in alternate rows and cicer milkvetch-alfalfa in alternate rows as well.

Before seeding a plant count was done at random over the experimental area to get the bench mark of the existing plants. Establishment success will be determined by observing unseeded treatment compared to seeded area for plant counts, DM yield and forage quality over 3-years. Soil quality indicators such as water-soluble aggregates, total C and N contents and nitrate-N content at all depths will be monitored at 4 depths (0-6”, 6-12”, 12-18” and 18-24”).

Sainfoin is a cool-season, perennial forage legume. It develops a deep, branched tap-root and numerous fine lateral roots. It is a non-bloat legume that is suitable for mixtures with alfalfa or cool-season grasses, such as Crested Wheatgrass, Russian Wildrye and Western Wheatgrass. Sainfoin has good longevity under optimal growing and management conditions. Mountainview, a new sainfoin cultivar, appears to have met the challenge of persistence for this palatable forage. In field testing it has shown it can survive and prevent bloat in mixed stands with alfalfa.

Cicer milkvetch is a new forage legume suitable for planting on ranges and pastures. Cicer milkvetch, either alone or mixed with grasses, is a good pasture legume; it is not known to cause any physiological problems such as bloat. In nutritive value, cicer milkvetch is similar to alfalfa; it provides nutritious forage until late fall. The new cultivar called AC Veldt cicer milkvetch has lower hard seed content than Oxley. It has improved seedling emergence over Oxley, increased plant height and quicker re-growth into the mid and late summer periods. It has improved yield of about 80% over an average alfalfa crop.

MUNICIPAL DISTRICT & COUNTY REPORTS



Clear Hills County Report

We completed 1048 inspections this year. In 2014 we had completed 871 inspections, and 2013 we completed 546. 2012 – 217 inspections. 2011 – 271 inspections. We've increased inspections by almost double in the last 3 years as we moved from paper inspection forms to Weed Inspection software utilizing GPS tablets. The new system means the weed inspectors spend more time in the field and on the road. Over the past three years we also added roadside spraying/weed control to the list of tasks for weed inspectors.

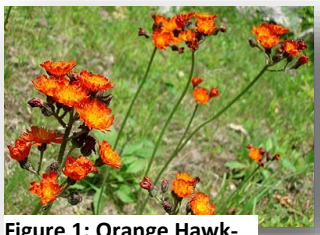


Figure 1: Orange Hawk-

Several large locations of Scentless Chamomile were located in 2015. Three locations were found up along the Chinchaga road and one in the Cleardale area. We took a day to inspect the Chinchaga road based on a tip about there being a Scentless Chamomile problem up there.

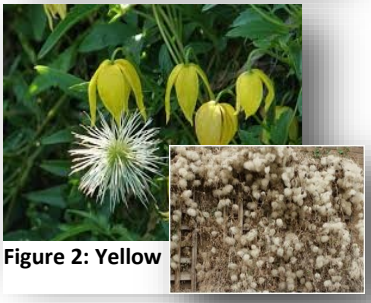


Figure 2: Yellow

Our weed program includes private and public land inspections, educating the public, managing weed infestations and preventing the establishment of new weeds to the area.

We continue to work with landowners and managers to control Scentless Chamomile, Common Tansy, Yellow Toadflax, Canada Thistle and Sow Thistle. Please help prevent the spread of these weeds by cleaning or requiring equipment to be cleaned when leaving an area or field that is infested with any of these weeds. When purchasing feed, do a field inspection to determine what kind of weeds will be in the feed. When purchasing seed, require a seed analysis certificate for the seed lot you intend to buy.

The majority of our roadside spraying is a spot spray approach to minimize herbicide use and environmental impact, while obtaining effective long term control of weeds. If you discover a patch of weeds or a few plants give the weed inspector in your area or myself a call.

The County has a substantial list of rental equipment available from a grain bagger to BBQs. Go online to www.clearhillscounty.ab.ca or call the County office for more information on the complete rental equipment list.

Clear Hills County will be hosting our 22nd Agricultural Trade Show on April 9, 2016 at the Dave Shaw Memorial Complex in Hines Creek, AB. If you are interested in attending or setting up a booth contact the office at 780-685-3925 or email aaron@clearhillscounty.ab.ca.

Aaron Zylstra, Agricultural Fieldman

MD of Peace No. 135 Agricultural Service Board 2015 Report

2015 passed and will not be remembered very productive year from economic point of view in Alberta. The headline in newspaper "Alberta endures most annual job losses since 1980 recession" emerged and there was ever increasing call to diversify the Albertan economy. We don't need to look too far it is already there "Rural Alberta where it all starts" and is a cherished way of life what we proudly call the profession of agriculture. Beside diversification in crop production, value addition is a need of hour. We need to take serious steps at policy, producer and marketing front to feed the world population and growing our communities.

Drought was main concern of MD Peace producers in 2015 like rest of the Peace Region. MD of Peace Council declared the Ag Disaster on the recommendations of Agricultural Service Board. West half of the MD was more affected by the drought and resulted in significant yield losses in crops. Significantly reduced pasture and hay yield forced some livestock producers to reduce their herd.

We purchased a new John Deere tractor and Schulte mower with flex arm and started full ditch mowing in 2015. In the past all MD roads were getting 10 ft road shoulder cut. Simultaneously, public works department stated the brushing of the ditches. This full ditch mowing and brushing project will be completed in four years. Full ditch mowing is considered environmentally friendly form of vegetation control and eliminates the need of brushing/mulching separately. This program will ensure proper drainage during spring runoff, road surface to dry more quickly and also allow movement of farm machinery to safely travel on municipal roads.

In our weed control program we sprayed all the ditches north of highway 2 and NE of highway 684 with the spray truck, sprayed the fenceline in the sprayed area with spray utility vehicle. Sprayed Strong Creek Park, Brownvale Camp Ground, Lac Cardinal Camp Site and Stampede ground for weed control. Signed contract with Alberta transportation and sprayed both side fenceline of highway2 starting from Town of Grimshaw to end of municipal limits towards Fairview. Beside this also sprayed highway 685 fence to a length of 3.5 miles. Sprayed 6 producers 30 quarter fenceline under free fenceline spraying program for control of noxious weeds.

Fusarium Head Blight, Clubroot of Canola, Virulent Blackleg of Canola, Grasshopper and crop reporting survey was done. None of the field has Clubroot of Canola. MD of Peace paid for 59 Fusarium Head Blight samples sent to lab by the Grimshaw Seed Cleaning Plant and all samples were negative. MD of Peace ASB encourages all producers to test for Fusarium before taking cereal grain to seed cleaning plant and MD will cover the cost. The MD ASB will be organizing Farmer's Appreciation Night on April 8, 2016 at Legion Hall Grimshaw and all MD producers are invited to attend. I wish 2016 year of lesser disasters, less accidents, less hate and loads of love. Happy New Year!

Nasar Iqbal (P. Ag.), Agricultural Fieldman

Municipal District Of Spirit River No. 133 Report

The MD of Spirit River had a good season in 2015. Our crop year began with good growing conditions as we went into seeding with adequate moisture. It was cool but not cold. Crops began well but it quickly became dry. The hay crops suffered the worst and yields were low. We never received any significant precipitation until September and that mixed with a hard frost in July reduced many grades on wheat and canola. Spring seeded crops had surprisingly good yields which were generally above average.

We had very little weed, insect or disease complaints as it was dry most of the summer. There was some grass hoppers that were significant in a few areas of the MD. Our municipality mows all of the rights of ways to control weeds and brush and this has significantly reduced the amount of spraying that we require each year. We still require spraying to control the small patches of scentless chamomile, tansy and field scabious. We had very little toadflax this year. We appreciate all of the farmer's cooperation and diligence in weed control. Our crop yields and aesthetics of the MD have continually been improving. They take an active role in the improvement of the entire area. Our Municipality will be holding a joint Centennial celebration in conjunction with the Town of Spirit River August 5-7, 2016. We would invite anyone who wishes to participate to check out our MD website and Facebook for further details. There will be many activities for all to enjoy each day.

We appreciate the cooperation of the PCBFA around our region and their support of our farmers locally.

Agricultural Service Board Report submitted by Kelly Hudson

Municipal District Of Fairview #136 Report

Hi folks. It seems hard to believe that 2015 has gone by and we are well on our way into 2016. It seems that the combines had just been put away, but I guess when we look at the tremendous amount of snowfall we have received so far, well, it's a good thing they have been tucked away and hidden from all this white stuff!

For as fast as it has went, the Agricultural Department of the M.D. of Fairview have accomplished some impressive achievements. Our weed inspectors, 2 of them, completed over 587 weed inspections on our municipalities lands this past season. For most part, the producers here are very proactive on their weed control which benefits their crop production and benefits the agriculture department.

In our Vegetation Management program, we had sprayed 593 ditch miles north and west of highway #2. This is half our municipality and we rotate yearly so 2016 will see us applying herbicides south and east of highway #2 that contains approximately 478 ditch miles. We also have a toadflax spray program, especially on the eastern part of our municipal roads, where we spot spray approximately 180 ditch miles. Other areas that need attention also get spot sprayed, especially on the half that doesn't receive a herbicide application. We also mowed all our municipal ditches once and due to the early starts, we redo the area where we started and mow until we find shorter growth. That is approximately 1340 ditch miles per year. If time permits, we also make some second passes on market roads. We have also worked with some oil companies and a couple landowners over the last few years to deal with some scentless chamomile issues and presently, they are non-existent but some seed may still be in those areas so we monitor those sites very closely.

We also have a pest and disease inspection program. For Alberta Agriculture, we do grasshopper counts and set up Bertha Armyworm traps and do counts on them. Alberta Agriculture compiles that information from all municipalities within Alberta that participate and are able to predict the next years infestations. That information is valuable to our producers and can be found on Alberta Agricultures website. The Fairview Co-operative Seed Cleaning plant will also send out our local producers cereals samples for Fusarium Head Blight with no charge to you producers as the M.D. of Fairview will pay for the testing. I believe there is a limit on how many samples each individual producer can have tested so please be aware of that. We also have completed 60 clubroot inspections in 2015 and have found none. Our priority areas that are checked first are areas where there may have been oilfield construction or leases built, or power line companies installing new poles or lines with contractors that are out of our area, or road building companies and bridge replacement areas also. Just remember that you as a producer have the right to have these contractors have their equipment steam cleaned prior to entering your land.

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Municipal District Of Fairview #136 Report

As far as problem wildlife, we find that our municipalities largest problem are coyotes. They tend to come out in full force for our cattle producers when cattle are calving, primarily in the spring time. The afterbirth is usually what attracts them and if that can be moved to a distant location away from your calving area, the calves for most part will stay safe. This goes for the sheep farmer also. We do have poisons available free of charge that I can distribute, but only under legitimate circumstances. The first priority as far as you, the producer can do is be proactive on your calving techniques.

Something to also note is how well PCBFA is doing with venues they put on, field walks, working well workshops etc and the interesting plots of various grains, forages, pulses etc they have in various municipalities including at the Research Farm northwest of Fairview. The Ag Service Board members and I attend some of these venues and I found a lot of them are well attended as there is plenty of good information given at the workshops and venues. Monika, Stacy, (who no longer is with PCBFA), Kaitlin and Akim have done a tremendous job in getting wonderful workshops and venues put together for the grain producers and cattle guys!!

2015 has been a busy year for the Agriculture Department and we can't see that changing in 2016. The Agriculture Department of the M.D. of Fairview wish you all a happy and productive New Year. We look forward to your questions and comments as we move towards the years to come.

Submitted by Fred Sawchuk, Agricultural Fieldman, M.D. of Fairview #136

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