



FARMING FORWARD ANNUAL REPORT

2023



Farming Forward

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Farming Forward (FF) is a non-profit, producer directed organization providing leading-edge applied, innovative and unbiased research as well as knowledge transfer and learning opportunities to the west-central Alberta region. Operating since 1978, we bring together a network of producers, industry and researchers to move the Agricultural industry forward.

We are pleased to make available this edition of our Annual Report. It contains a description and summary of project results and extension activities carried out by FF in 2023.

President's Message

This is my third and final report as president of Farming Forward, and I am grateful for the opportunity you have given me. I've spent the last three years trying to figure out who we are, our role, and how we can become more relevant.

What does that look like? Advances in technology, genetics, and management practices are being made faster than ever, with opportunities to improve efficiency and reduce

expenses. As land owners, we can simultaneously deliver environmental goods and services and improve our profit margins. It always amazes me how many areas of expertise there are. I've met many people who have spent years studying and specializing in fields I did not know existed.

A balance between tradition and innovation is possible. Innovation is necessary. It asks us to take risks and step out of our comfort zones. Tradition reminds us to remember how we got here and taps the brakes when things start to go wrong.

We put together a team, both board and staff, with a wide variety of skills and a great deal of intelligence. Carri has shown a tremendous ability to adapt and learn on the go. The learning curve was vertical, but she found what she needed for resources and dug in. She brings fresh eyes and a new perspective and is committed to succeeding. Not just because it's her job but because she loves taking on challenges and finding solutions. She has learned the job and made it hers quickly, getting the procedural things in place and the organization back on track. I think that phase is almost complete, and with the AGM out of the way, she can focus on getting to know producers and their needs, building our brand, and raising money.

Although all directors are qualified and capable of chairing the board with eloquence that eludes me, Ian has some unique qualifications. In addition to being generous with his time, he specializes in developing and applying technology. With financial support



somewhat in place and a solid team supporting her, Farming Forward has enormous potential. We have a tradition of forward-thinking producers getting together to take in information and share ideas. Come to a few events, join the conversation, share our successes or disappointments, ask questions, and make suggestions. This organization belongs to you.

Rod Nikkel

FFA Board President

Executive Director's Message

Hello! Allow me to introduce myself, I am Carri St. Pierre. I am so honored and happy to join the Farming Forward team. I am a Saskatchewan transplant who has been living and working in Edmonton for over 20 years. As a kid, I would spend time on my grandparents' farm driving around the tractors and butchering chickens every fall. I've spent much of my time in the city as an adult, but my heart belongs on a farm. In my previous role, I



worked for Alberta Agriculture and...Rural Development, Forestry, and Irrigation (depending on which year you were referring to). With a laboratory and research diploma, I committed myself to animal health and food safety in a molecular diagnostics laboratory. I recently graduated from NAIT with a Bachelor of Technology Management degree; a business degree that specializes in innovation and technology development. My strengths are understanding science, being open-minded and curious about how farming works, and being willing to learn and try new things that might be different than the norm.

As I navigate this new role, I am so thankful for the support and encouragement of the Board of Directors, a small but mighty team of staff, and the valuable connections of our county partners, other ARAs, and associations. Our members have been patient and supportive, and I have witnessed what makes Farming Forward so special. Personnel highlights include the hiring of Leigh-Anne Powers as the Agricultural Research Coordinator, Jessica Rogerson pausing to expand her family, and a young, keen group of students expanding our capacity through the summer months. Our project and extension activities in 2023 were less extensive due to significant change, but we still provided some well-attended events and valuable data from our plot trials.

Looking forward into 2024, Farming Forward will strive to be more visible and accessible to our members. We will grow our network and partner with more experts in different areas of farming. We will collaborate with other researchers, innovators, start-ups, and producers to apply novel methods to real-world

practice. If you are interested in working with Farming Forward, please reach out to us anytime. We are calling 2023 our seeding year, as we planted new seeds of inspiration, talent, and direction.

We are beginning to develop a deeper, stronger root system so that we can grow into a healthy, robust organization that can provide results to our producers that make a difference in their lives. I am excited to work with our members to see how far we can grow.

Carri St. Pierre

Executive Director

2023 Board of Directors

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Mayerthorpe

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Colleen Stein
Barrhead

Val Beaulieu
Onoway

2023 Staff

Executive Director (Interim)

Conservation Agriculture & Extension Program Coordinator

Jessica Rogerson
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Executive Director (Incoming)

Carri St. Pierre
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Agriculture Research Coordinator

Leigh-Anne Powers
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Summer Field Technicians

Ashley Trebell and Madison Jackson

Acknowledgements

The operation of Farming Forward (FF) depends on support and cooperation from many groups and individuals. FF would like to extend our sincere appreciation to the many producer cooperators working with us to carry out our projects. You play a very important role in our demonstration and research activities and contribute greatly to the success of these projects. We would also like to thank our members, board of directors, project advisors, cooperators, sponsors, funders and everyone who has supported us throughout the year. Without the support and cooperation of so many, our programming would not be possible.

FF would like to acknowledge the following but not limited to, who have contributed to WFF in a variety of ways by providing funding, donations, inputs, partnered on projects or extension events, lent a helping hand when we needed it or who have provided support in some other way. Our sincere apologies for anyone we may have missed.

20/20 Seed Labs
A&L Canada Laboratories
Agriculture and Agri-Food Canada
(AAFC)
Alberta Agriculture and Irrigation
Alberta Beef Producers (ABP)
Alberta Conservation Association
Alberta Environmental Farm Plan
(EFP)
Alberta Forage Industry Network
(AFIN)
ALUS
ALUS Brazeau
ALUS Lac Ste. Anne
ALUS Parkland
Applied Research & Extension
Council of Alberta (ARECA)
Bart Guyon
Battle River Research Group (BRRG)
Beef Cattle Research Council (BCRC)
Blue Rock Animal Nutrition
Brazeau County
Canadian Forage and Grassland
Association (CFGA)

Canadian Hemp Trade Alliance
(CHTA)
Canadian Round Table for
Sustainable Beef (CRSB)
CARA Soil Health Lab
Chinook Applied Research
Association (CARA)
Churchill Land and Cattle
Corn Brothers Seed
Courtney O'Keefe, Blue Rock Animal
Nutrition
Cows and Fish
Curtis Schendel
Dr. Kris Nichols
Duane Movald
Food Water Wellness Foundation
Foothills Forage and Grazing
Association (FFGA)
Gateway Research Organization
(GRO)
Graeme Finn
Grey Wooded Forage Association
(GWFA)
Imperial Seed

Kidd Bros.
Kimberly Cornish
Lac Ste. Anne County
Lakeland Applied Research
Association (LARA)
Lakeland College
Leduc County
Mackenzie Applied Research
Association (MARA)
Martin Deerline
North Peace Applied Research
Association (NPARA)
Northstar Seed
Nutrien Ag Solutions
Olds College
Parkland County
Peace Country Beef & Forage
Association (PCBFA)
Quantum Genetix
Raymond Chittick
Results Driven Agriculture Research
(RDAR)
Shorty Fensky
Smoky Applied Research &
Demonstration Association
(SARDA)
Stony Plain Seed Cleaning
Sustainable Canadian Agricultural
Partnership (SCAP)
Union Forage
Woodlands County
Yellowhead County



Plots and Demonstrations



Small Plot Trial Set-Up

Site Preparation

FF follows best management practices, when possible, which include crop rotation, soil testing and spraying for weed control.

Soil tests are carried out at each site to determine appropriate fertilization rates for each trial. The amount of seed for most trials is determined using seed germination, seed weight and target plant density, or industry recommended rates when this information is unavailable.

Plot sites are tilled prior to seeding, and a pre-seed application of herbicide is applied when possible/applicable. In most years tilling is conducted using a three-point hitch rototiller. Tilling is due to limitations with seeding equipment.

Seeding & Harvest

Some of our small plots are seeded using FF's Fabro five-row small plot drill equipped with disc openers. In other instances, contractors are hired to provide seeding services. When fertilizer is applied it is typically side-banded at time of seeding. Row spacing is set at 22.5 cm (8.9 inches).



FF Fabro five-row small plot drill

Harvest is typically conducted using a BCS tractor equipped with sickle mower bar. The harvest area is determined individually for each trial, making sure a representative sample is collected.

Following harvest, representative samples (after drying for forages) are shipped to A&L Laboratories in Ontario for feed quality analysis. (Note: Hemp samples were sent to various labs for appropriate testing based on the protocol from the Canadian Hemp Trade Alliance in 2021).

Plot Layout

All small plots are seeded in a randomized block design, with four replicates to reduce error. Plots are typically 9 square meters in area (with a typical length of 8.0m for most trials). A typical block design is illustrated below.

Typical block design for small plots at FF

Guard	Rep 4. (Containing all varieties in trial)	Guard
3.0 m spacing for maintenance		
Guard	Rep. 3 (Containing all varieties in trial)	Guard
3.0 m spacing for maintenance		
Guard	Rep 2. (Containing all varieties in trial)	Guard
3.0 m spacing for maintenance		
Guard	Rep. 1 (Containing all varieties in trial)	Guard

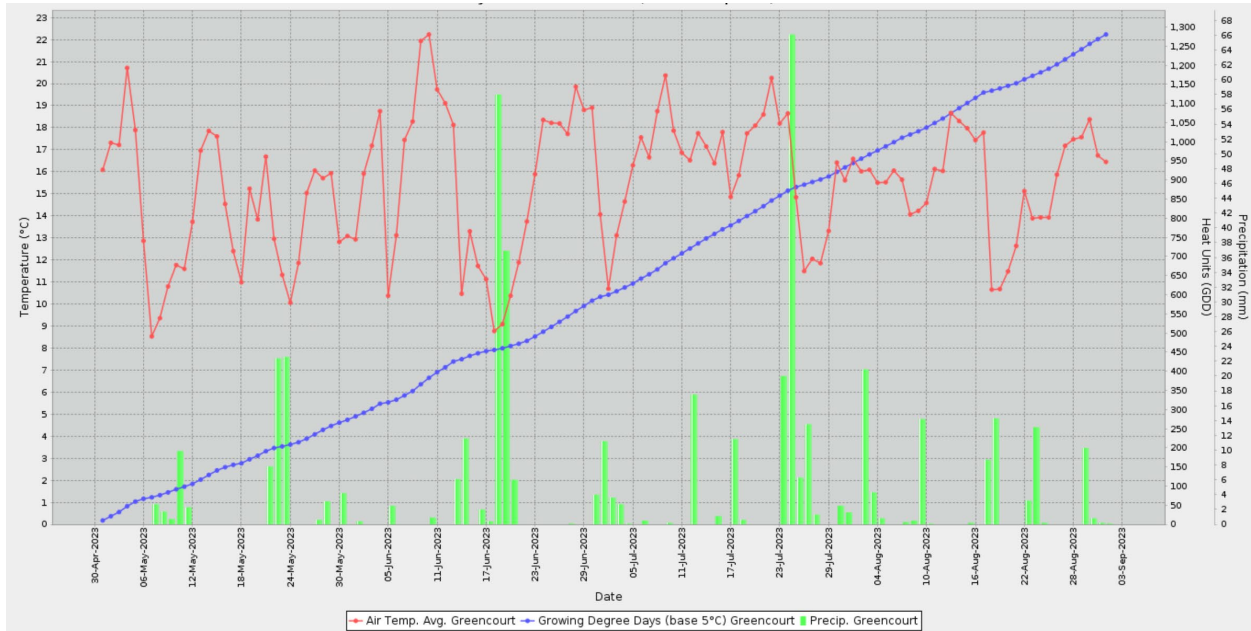
Data Reporting

Yield, height, and lodging numbers reported throughout this Annual Report represent an average of measurements from the four replicates per variety. Feed quality numbers reported throughout this report represent an average for the two composite samples for each variety. Each composite sample is typically composed of representative samples from 2 of the 4 varieties (For example, Reps 1 and 3, and Reps 2 and 4).

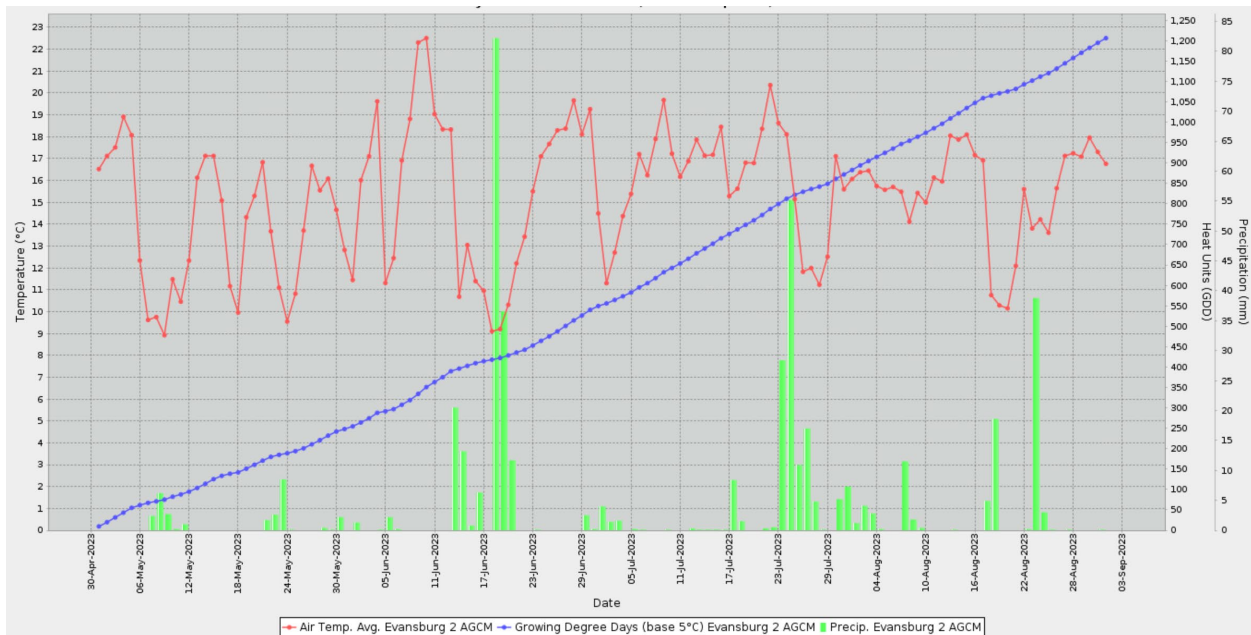
2023 Weather Information

Daily Air Temperature, Precipitation and Growing Degree Days from Environment Canada from four weather stations in the FF area closest to research plots locations from May 1, 2023 to September 1, 2023 are displayed below. Greencourt weather station is located near the Mayerthorpe trial sites,

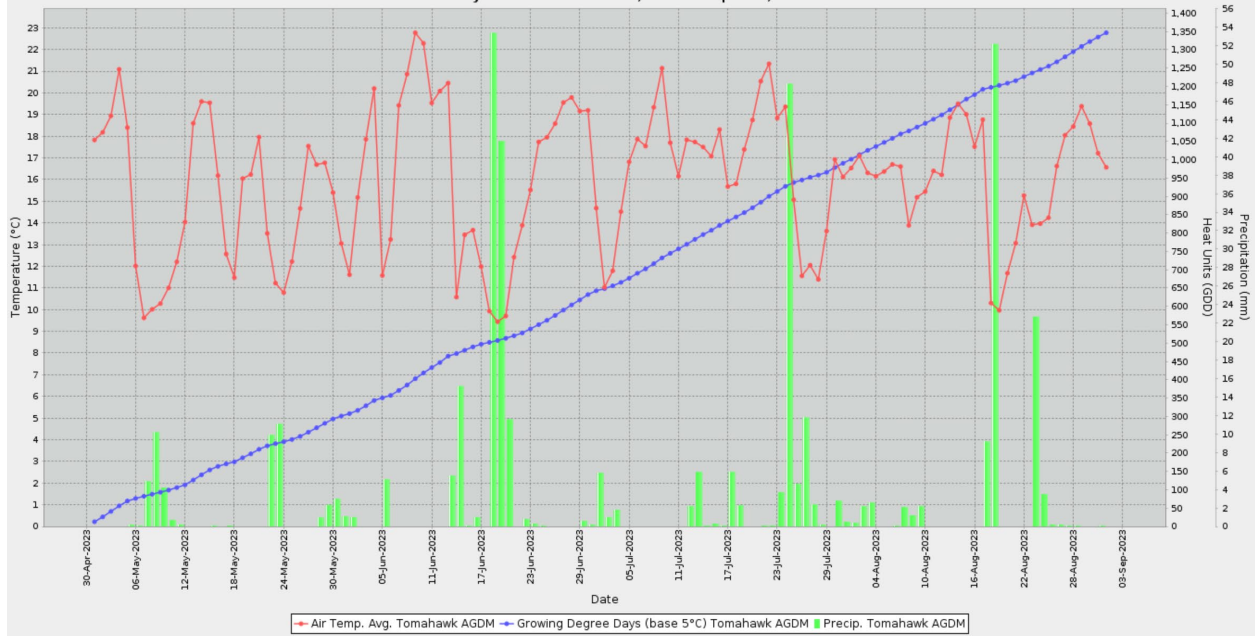
Evansburg weather station is near the Wildwood plots, Tomahawk weather station is near the Brazeau plots, and the Paddle Dam weather station is near the Lac Ste. Anne County plots.



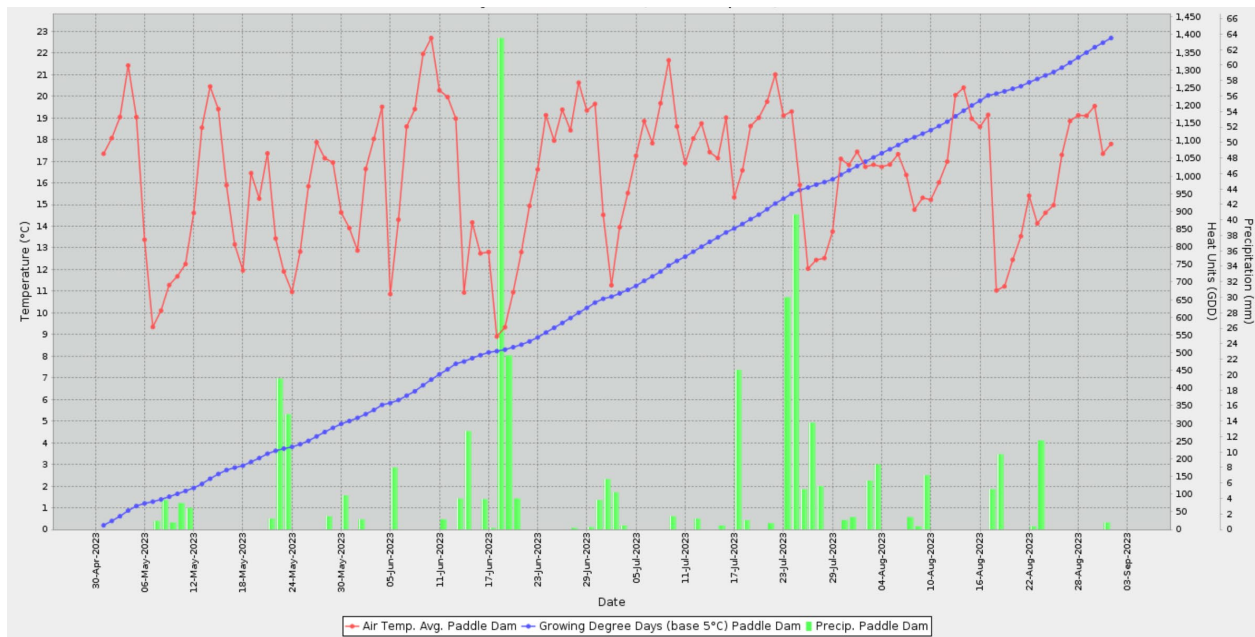
Weather information from Greencourt weather station.



Weather information from Evansburg weather station.



Weather information from Tomahawk weather station.



Weather Information from Paddle Dam Weather Station.

Feed Result Metrics & What They Mean

Crude Protein (CP)

Beef Cow Rule of Thumb: 7-9-11. This means the average beef cow requires 7% protein in mid-gestation, 9% in late-gestation and 11% after calving.

Feeder Calf Rule of Thumb: 14-12-10. This means feeder calves from 550-800 lbs. require 14% protein, 12% for 800-1050 lbs. and 10% for 1050 lbs. to finish.

Total Digestible Nutrients (TDN)

Refers to the feed's energy value.

Beef Cow Rule of Thumb: 55-60-65. This means that for a mature beef cow to maintain her body condition score through the winter she will require 55% TDN in mid-gestation, 60% in late-gestation and 65% after calving.

Neutral Detergent Fibre (NDF)

This is an indication of the ration's fill. Lower NDF levels are preferred and anything starting to get above 60% is cause for concern.

Acid Detergent Fibre (ADF)

This is connected to forage digestibility; the lower the ADF value, the more digestible the forage.

Calcium (Ca) and Phosphorus (P)

These should be looked at as a ratio. The ideal range is 2:1 to 6:1. Anything outside this range may lead to metabolic issues.

Calcium (Ca), Potassium (K) & Magnesium (Mg) (Tetany Ratio)

Combinations of high K, and/or low Mg can lead to performance issues. The tetany ratio is expressed in $K/(Ca + Mg)$ in milliequivalents (mEq). The ratio of K to the sum of Ca & Mg should be below 2.2 to avoid winter tetany.

**Note: to calculate, percentages reported must be converted to millequivalents per kg.*

Relative Feed Value (RFV)

An index that estimates intake and digestibility. It is only useful for evaluating 100% alfalfa hay or silage only. Full bloom alfalfa hay is used as the baseline with an RFV of 100; values below 80 typically do not meet animal requirements for energy. This value is not reliable for mixed hay, grass hay or cereal greenfeed.

Often used as a benchmark for selling alfalfa hay, but is not used in ration formulation.

Alberta Agriculture's "Beef Ration Rules of Thumb" Agrifacts sheet can be found in the APPENDIX under Beef Ration Rules of Thumb Agri-facts.

2023 Hemp Intercropping Trial

OVERVIEW

In order for Industrial hemp to be a profitable crop for Canadian farmers, it is important to understand which cultivars grow best in particular regions of Canada. Industrial hemp is highly regulated around the world. Limits to the amount of both THC and nonnarcotic cannabinoids (NNC) in hemp products require a constant understanding of the evolution of hemp cultivars being used by the hemp industry. Monitoring through scientific study and laboratory analysis is required to balance the regulations and the difficult task of growing Industrial hemp for profitable commercial purposes.

This trial aimed to provide current and comprehensive yield and quality data on growing hemp as a mono-crop compared to hemp intercropped with clover and alfalfa. This project looked into the economics of hemp grown with other crops to improve on-total farmland use production and efficiency. The project focused on annual cash crops for high yield and using the companion crop or 'high nutritive value' annual crops. This approach could benefit Alberta producers by mitigating the risk of crop failure and increasing the farm's overall productivity.

Hemp is a crop that has gained increasing attention in recent years due to its versatile uses and potential health benefits.

PARTNERS

- Alberta Hemp Works
- University of Alberta
- Bart Guyon
- Northstar Seed
- Brazeau County



METHODS

We sought to compare hemp as a mono crop versus an intercrop. Understanding how to grow hemp efficiently can provide producers with the information necessary to make management decisions that will ensure productivity.

The plots were set up in 3 blocks in Brazeau County on land donated by Bart Guyon. Total land used was 0.33 acres. Seeding occurred on June 12th, 2023, by Dick Puurveen with the University of Alberta using a 10ft press drill. Hemp was seeded north to south and the intercrops (alfalfa and clover) were seeded east to west. The site was rototilled prior to seeding.



Seeding June 12th, 2023



Weed pressure Aug 11th, 2023

Agronomic data for 2023 Hemp Intercropping Trial conducted in Brazeau County

Variety	Seeding depth	Seeding rate	Fertility	Harvest date
Vega	1"	25lbs/acre	none	not harvested-due to excessive weed pressure
Alfalfa	1/2"	20lbs/acre	none	not harvested-due to excessive weed pressure
Clover	1/4"	5lbs/acre	none	not harvested-due to excessive weed pressure

The hemp was not harvested due to weed pressure

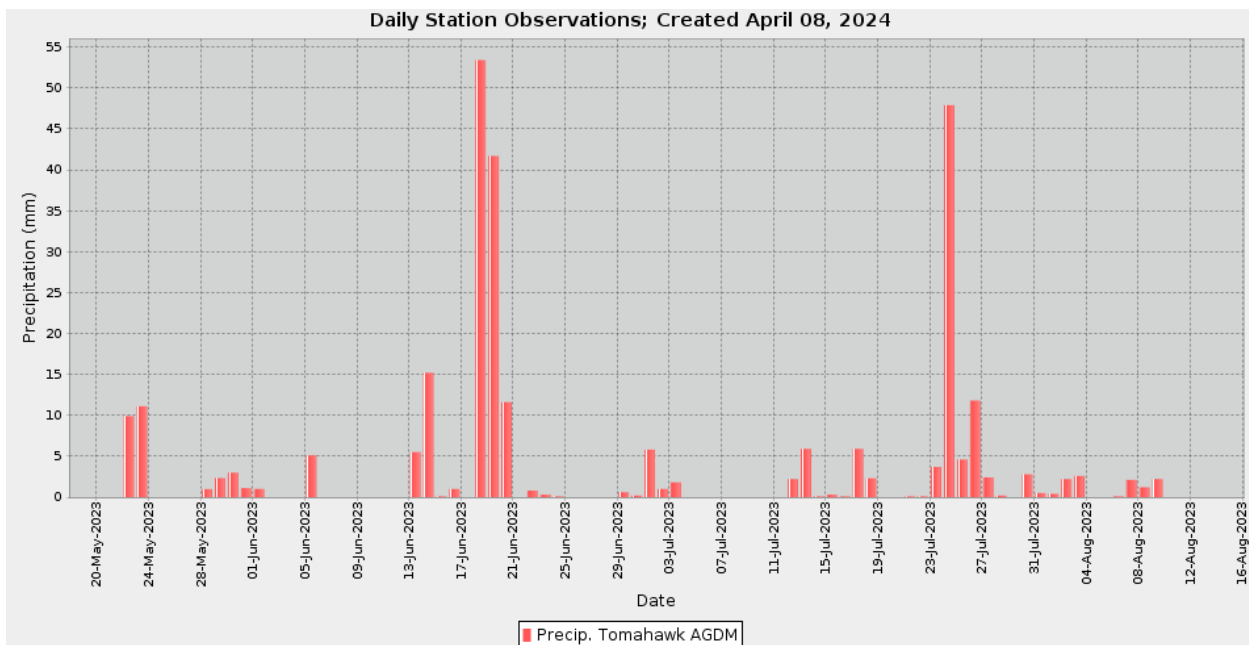
PROGRESS TO DATE

Conditions in 2023 were not favourable for producers in the West-Central region. The Government of Alberta reported a “once in 50 year dry and once in 50 year wet conditions” as of July (Alberta Agriculture and Irrigation, 2023). There was little precipitation through the majority of the early growing season, soil moisture was considered low and the region’s governing bodies declared

drought. Forest fires in Brazeau County forced the evacuation of the area from the end of April until mid-May. Shortly after the evacuation, Brazeau County received nearly 80 mm of precipitation in 3 days. Weed competition and soil compaction combined to result in poor crop vigor.

Industrial hemp does not tolerate water-logged conditions well, so the excessive, concentrated precipitation may have been detrimental for growth. Air and soil temperatures and moisture readings were taken from the nearby Tomahawk weather station. Soil samples and emergence counts were taken.

We collected emergence counts on June 27th; in the hemp/clover plot, we saw an average of 11 hemp plants per sq./m and an average of 37 clover plants per sq./m. In the hemp mono-crop, we saw an average of 16 hemp plants per sq./m. In the hemp/alfalfa plot, we saw an average of 18 hemp plants per sq./m and an average of 17 plants per sq./m. Unfortunately weed pressure proved to be extensive and the decision was made to discontinue data collection on August 11th, 2023 so no yield/biomass samples were taken.



Precipitation in mm during the growing season (May 20th-Aug 11th), Tomahawk station, closest weather station to plot site.

This graph illustrates the dry conditions prior to seeding. We did receive some moisture after seeding and later in July, but overall soil moisture could be considered low. That, with the late seeding and weed pressure, could account for the poor hemp establishment.

FUTURE WORK

For future success, more site preparation before seeding may be needed such as a pre-seed burn, or disking/harrowing. Better land preparation and management can aid in better establishment. Soil analysis can provide a recommended fertilizer application at seeding. Herbicide spraying after seeding may also help with minimizing weed pressure. Good agronomic practices state that rotating locations can maintain robust and repeatable results. Given this site has been used since 2017, a new location may provide a future opportunity for a more desirable outcome.

We will be changing locations in 2024; along with better management practices, we hope to see good hemp establishment as a mono-crop and inter-crop. This information can give producers the recommendations needed to use hemp in their practices to its full potential.

References

Alberta Agriculture and Irrigation (2023, July 19). *Moisture situation update*. Open Alberta. <https://open.alberta.ca/dataset/0ae16bde-ef0e-4eef-a4f6-123f799eb410/resource/f6537087-766a-406a-9b60-95e4b11b45be/download/agi-moisture-situation-update-2023-07-19.pdf>

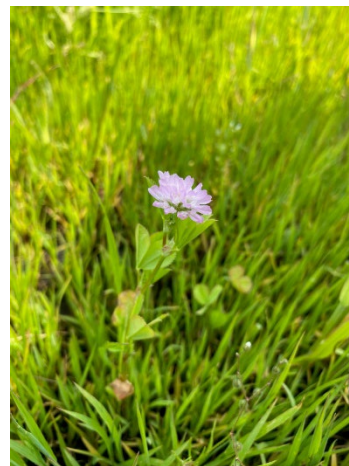
2023 Polycrop Soil Health Blend

OVERVIEW

The purpose of this trial is to look at what a polycrop blend can do for soil health. Understanding and using the soil health principles, can assist in developing proper crop blends and management practices to increase productivity and improve or maintain soil health. The information gathered from this trial could assist in mitigating any risks and failures for Alberta producers, and help increase on farm productivity. The project will aide in the transfer of knowledge through extension work, such as workshops, webinars, newsletters and websites.

PARTNERS

- Schendel Ranch and Holdings
- Northstar Seed
- Yellowhead County



METHODS

The entire piece of land (~15 acres) was prepared and seeded to a polycrop blend by Curtis Schendel of Schendel Ranch and Holdings. A specific blend was created to improve soil health, weed pressure and compaction.

Each species was chosen for its ability to improve different soil characteristics. For example, clover is a nitrogen-fixer and adds organic matter. Japanese millet reduces soil degradation and is a drought-resistant species. Turnips help break up soil and maintain soil moisture. Sunflowers alleviate soil compaction and can absorb chemicals from the soil.

Species	%
Yellow Blossom Clover	3
Elunaria annual Ryegrass	14
Japanese Millet	14
Berseem Clover	7
Crimson Clover	7
Persian Clover	7
Hairy Vetch	7
Kale	2
Purple Top Turnips	3
Chicory (coated)	4
Plantain	3
Phacelia	3
Sunflowers	21
Faba Beans	5

Polycrop blend provided by Northstar Seed

PROGRESS TO DATE

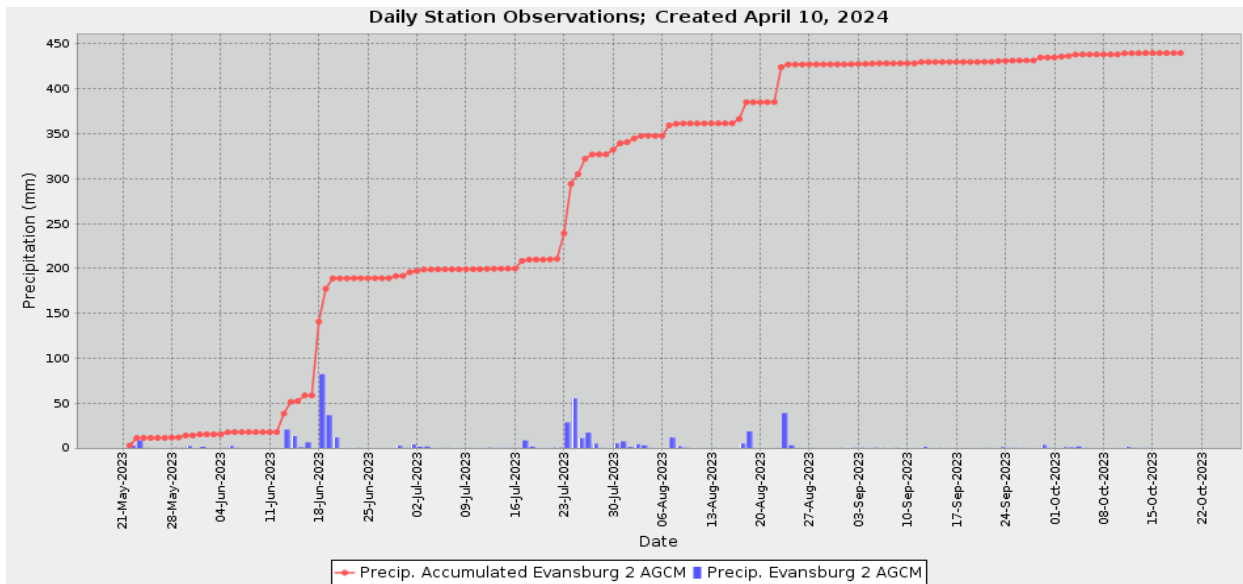


July 19th, 2023

The site was disced on June 12th and was seeded and fertilized on June 16th. Throughout the growing season, we were able to make visual observations. On June 27th, we observed 4 species emerging. In July there were 12 species visible and the clover was at a 3-leaf stage. From late July to mid-August, there was significant moisture recorded.

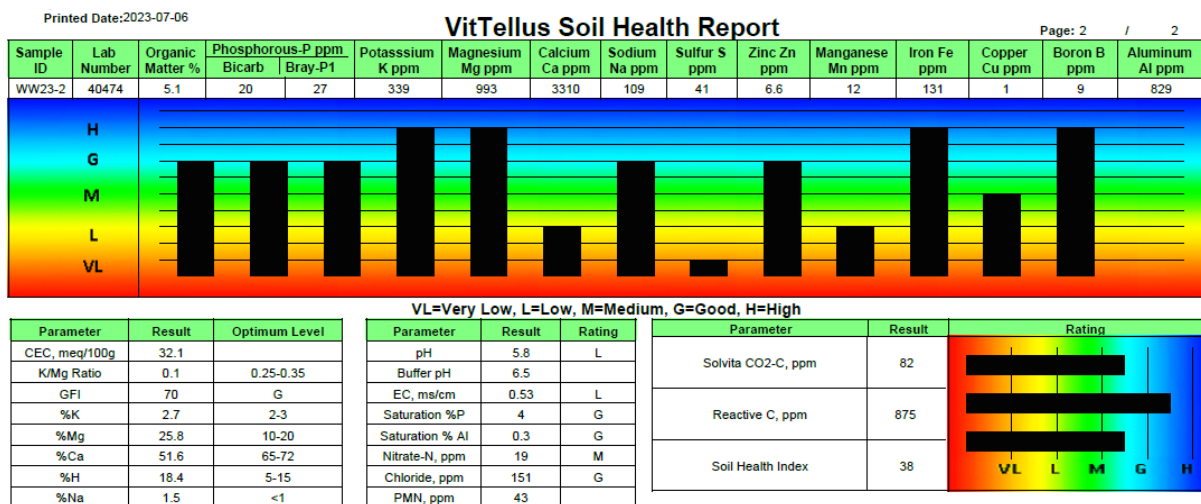


Seeding on June 16th, 2023



Accumulated precipitation recorded during the growing season (May- Oct) at the Evansburg weather station.

As seen in the chart below, we took soil health samples at seeding. The soil health index was between medium and good; however, there is room for improvement. Our focus is to look at different plant species and management practices using some of the soil health principles to aid in the improvement of the overall site. Maintaining and improving soil health can have a positive effect on production as well as economic viability.



Reported Date:		Printed Date: Jul 6, 2023		SOIL TEST REPORT										Page: 1 / 1			
Sample Number	Legal Land Descpt:	Depth	Lab Number	Organic Matter	Phosphorus - P ppm Bicarb	Phosphorus - P ppm Bray-P1	Potassium K ppm	Magnesium Mg ppm	Calcium Ca ppm	pH	CEC meq/100g	Percent Base Saturations					
										Buffer	% K	% Mg	% Ca	% H	% Na		
WW23-1		6	40473	7.3	19 G	28 G	363 VH	712 H	3210 M	5.9	6.5	29.1	3.2	20.4	55.2	20.4	0.8
WW23-2		6	40474	5.1	20 G	27 G	339 VH	993 VH	3310 L	5.8	6.5	32.1	2.7	25.8	51.6	18.4	1.5

Sample Number	Sulfur S		Nitrate Nitrogen NO3-N		Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Soluble Salts mmhos/cm	Saturation %P	Aluminum Al ppm	Saturation %Al	K/Mg Ratio	ENR	Chloride Cl ppm	Sodium Na ppm
	ppm	lbs/ac	ppm	lbs/ac													
WW23-1	16 VL	29	14 M	25	11.8 VH	16 M	110 VH	1.0 M	1.1 M	0.4 VL	5 M	774	0.3 G	0.16	86	27	55 M
WW23-2	41 VL	74	19 M	34	6.6 H	12 L	131 VH	1.0 M	9.0 VH	0.5 L	4 G	829	0.3 G	0.10	64	151	109 H

W VL = VERY LOW, L = LOW, M = MEDIUM, H = HIGH, VH = VERY HIGH, G = GOOD, MA = MARGINAL, MT = MODERATE PHYTO-TOXIC, T = PHYTO-TOXIC, ST = SEVERE PHYTO-TOXIC

Soil test report for Wildwood 2023.

The soil test indicates that the organic matter is slightly above average for this site, normal ranges are around 3%-6%. The samples taken were 5%-7%. The nitrate levels are in the medium range between 14 ppm-19 ppm. Levels below 10ppm are considered low and above 20ppm indicates adequate nitrogen for plant growth.

The site was cut and baled on October 19th, production was 39 bales at approximately 1400lbs each, total 27 tonnes. Bales were wrapped and after one month on December 4th they were feed tested.

PARAMETER	RESULTS		UNIT	METHOD
	AS FED	DRY		
DRY MATTER				
Moisture	19.25	0.00	%	AOAC 930.15
Dry Matter	80.75	100.00	%	Calculation
PROTEIN				
Crude Protein	6.40	7.93	%	NIR
Soluble Crude Protein	21.16	21.16	% of CP	NIR
ADF-CP	1.32	1.64	%	NIR
NDF-CP	2.82	3.49	%	NIR
UIP (Bypass Protein)	45.05	45.05	Est % CP	NIR
FIBRES				
Acid Detergent Fibre	37.91	46.95	%	NIR
Neutral Detergent Fibre	47.88	59.30	%	NIR
Lignin	4.26	5.28	%	NIR
ENERGY				
Total Digestible Nutrients (Weiss)	48.23	59.73	%	Calculation
NE Lactation	0.94	1.17	MCal/Kg	Calculation
Net Energy Lactation (Weiss)	1.08	1.34	MCal/Kg	Calculation
NE Gain	0.41	0.51	MCal/Kg	Calculation
Net Energy Gain (Weiss)	0.40	0.49	MCal/Kg	Calculation
NE Maintenance	0.99	1.23	MCal/Kg	Calculation
Net Energy Maintenance (Weiss)	0.85	1.05	MCal/Kg	Calculation
MINERALS				
Calcium	0.37	0.46	%	AGR-G-004 *
Chloride	0.26	0.32	%	NIR
Copper	2.55	3.16	ug/g	AGR-G-004*
Phosphorus	0.15	0.19	%	AGR-G-004 *
Potassium	1.32	1.64	%	AGR-G-004*
Sulphur	0.13	0.16	%	AGR-G-004 *
Magnesium	0.17	0.21	%	AGR-G-004*
Zinc	25	30.34	ug/g	AGR-G-004 *
Iron	147	182.20	ug/g	AGR-G-004 *
Manganese	71	87.53	ug/g	AGR-G-004 *
Sodium	0.02	0.02	%	AGR-G-004*
OTHER				
Starch	0.99	1.23	%	NIR
Total Ash	11.90	14.74	%	NIR

PARAMETER	RESULTS		UNIT	METHOD
	AS FED	DRY		
Crude Fat	2.24	2.78	%	NIR
NFC	12.31	15.25	%	Calculation
Molybdenum	1.52	1.88	ug/g	AGR-G-004 *
Relative Feed Value	82.09	82.09		Calculation

Feed test results of the polycrop blend from Wildwood.

CD (Crude Protein) encompasses protein and non-protein nitrogen. Sample was 7.93%. The general rule of thumb is 7-9-11 percent for mid-gestation, late-gestation and after calving.

TDN (Total Digestible Nutrients) refers to an estimate of the feed energy value. Sample was 60% within range as normal range is 55%-65%, the general rule of thumb is 55-60-65 for mid-gestation, late-gestation and after calving

ADF-CP (Acid Detergent Fiber-Crude Protein) amount of protein present. Sample was 1.64%, normal protein content is around 1%.

ADF (Acid Detergent Fiber) connected to forage digestibility. Sample was 47%, normal range for a grass-legume mix is 30%-45%.

C:P ratio (Calcium to phosphorus ratio) should be looked at as a ratio and the range is between 2:1 and 6:1. Our sample was 2:1 ratio.

FUTURE WORK

The most notable outcome of the 2023 trial is the production and quality of the site, according to average silage prices each bale could be sold at around \$100, total for the site was \$4000. It may prove that regardless of late start and unstable conditions, a specific poly-crop blend designed to maximize a location's soil characteristics may increase in vitality and improve overall soil health if given the appropriate amount of time. The extreme weather conditions of the last few years have highlighted the importance of understanding how forage and grain crops and methods of growing those crops can be changed to increase resilience.

We are hoping that in 2024 by continuing a poly-crop soil health blend for multiple years we can observe more improvement in the soil health index and even more overall productivity.

2023 Corn Yield Trials

OVERVIEW

This trial aims to compare different fertilizer rates on corn yield and quality. This project will look at how we can increase yield and maximize on-farm productivity. The information gathered from this trial could assist in mitigating any risks and failures for Alberta producers. The project will aid in the transfer of knowledge through extension work, such as workshops, webinars, newsletters and websites.

PARTNERS

- Rod Nikkel and Jay Hagel
- Lac Ste. Anne County
- Richard St.Pierre



METHODS

In 2023 at our Lac Ste. Anne site, we compared 4 different fertilizer rates (check, low, medium and high rates) on corn. Rod Nikkel seeded 2.8 acres of DLF ExSeed corn on May 26th, 2023 into 10 blocks, 2 for each rate plus 2 extra check blocks. The corn was seeded directly into ground with no land preparation.



Corn planter set at 36" row spacing

PROGRESS TO DATE

Plant counts	Date	Count area 1 (m²) east end	Count area 2 (m²) west end	Average stand assessment
No fertilizer 1	June 23, 2023	7	6	26,000
No fertilizer 2	June 23, 2023	6	5	22,000
High fertilizer 1	June 23, 2023	6	6	24,000
Low fertilizer 1	June 23, 2023	4	3	14,000
Med fertilizer 1	June 23, 2023	6	6	24,000
No fertilizer 3	June 23, 2023	3	5	16,000
No fertilizer 4	June 23, 2023	2	4	12,000
Low fertilizer 2	June 23, 2023	2	5	14,000
Med fertilizer 2	June 23, 2023	2	5	14,000
High fertilizer 2	June 23, 2023	5	5	20,000

Plant counts taken on June 23, 2023 (Stand Assessment-very approximate number).

Plant counts or stand assessments can help give a picture of germination rate and seeding assessment. With our values there was more variation in the east

end plant counts. The east end was a lower area, so potentially more moisture accumulated on that end. Average stand assessments for this site are 20,000 to 24,000 plants/acre, looking as an overall picture.

Plant Heights	Date	Height 1 (inches)	Height 2 (inches)	Height 3 (inches)	Average (inches)
No fertilizer 1	July 20, 2023	12	8.5	27	15.8
No fertilizer 2	July 20, 2023	5	19	35	19.6
High fertilizer 1	July 20, 2023	11	35	15	20.3
Low fertilizer 1	July 20, 2023	15	7	33	18.3
Med fertilizer 1	July 20, 2023	6	20.5	12.5	13
No fertilizer 3	July 20, 2023	14	8	22	14.6
No fertilizer 4	July 20, 2023	9	15	16	13.3
Low fertilizer 2	July 20, 2023	23.5	10	12.5	15.3
Med fertilizer 2	July 20, 2023	8	21.5	15.5	15
High fertilizer 2	July 20, 2023	8	14	27.5	16.5

Plant heights taken on July 20th, 2023.

Plant height is mainly used to determine the need for herbicide, for this trial we did not apply any herbicide. For our purposes, plant heights were a visual observation of the density and vigor of the crop comparing each fertilizer.

Corn biomass samples were taken on November 17th, 2023. Samples had wet weight taken and were air dried for 3 weeks. Dry weights were taken on December 13th, 2023 then sent for feed analysis on all samples.

Rep/Block	Number of corn stalks per 1m ²	Wet wt (kg)	Dry Wt (kg)	kg/m ²	Moisture Content (%)
No fertilizer #1 (bag 1 of 2)	8	2.085	0.990	2.050	52.5
No fertilizer #1 (bag 2 of 2)	8	2.105	1.150		45.4
Low fertilizer #2	10	0.410	0.210	0.200	48.8
No fertilizer #2 (bag 1 of 2)	11	1.005	0.365	1.015	63.7
No fertilizer #2 (bag 2 of 2)	11	0.585	0.210		64.1
High fertilizer #1 (bag 1 of 2)	9	2.220	0.720	2.280	67.6
High fertilizer #1 (bag 2 of 2)	9	1.155	0.375		67.5
Low fertilizer #1 (bag 1 of 2)	9	0.660	0.255	1.230	61.4
Low fertilizer #1 (bag 2 of 2)	9	1.195	0.370		69.0
Medium fertilizer #2	8	1.010	0.395	0.615	60.9
Medium fertilizer #1 (bag 1 of 2)	9	1.530	0.490	1.570	68.0
Medium fertilizer #1 (bag 2 of 2)	9	0.765	0.235		69.3
High fertilizer #2	10	1.465	0.565	0.900	61.4

Biomass 1m² cuts – weights and moisture levels.

The moisture content in almost all rates are within the ideal range for silage, between 60%-70% with the exception of No fertilizer #1 and Low fertilizer #2.

Fert. Rate	CP (%)	ADF (%)	NDF (%)	CA (%)	P (%)	K (%)
No fertilizer 1	8	36	69	0.22	0.2	1.19
No fertilizer 2	9.1	29	65	0.12	0.24	1.3
High fertilizer 1	10.2	30	62	0.1	0.28	1.21
Low fertilizer 1	6.3	38	64	0.18	0.22	2.17
Med fertilizer 1	6.4	37	65	0.26	0.16	1.43
Low fertilizer 2	9.1	38		0.22	0.14	0.88
Med fertilizer 2	8.7	32	59	0.18	0.18	1.22
High fertilizer 2	12.8	33	63	0.18	0.2	1.49

Feed Analysis for corn 2023

CP (Crude Protein) average for corn silage range is from 6.5% to 10%, all rates except for the high fert 2 are within that range.

ADF (Acid Detergent Fibre) average for corn silage range is from 18% to 26%, the values are all on the high side, this may indicate a lower energy content.

TDN (Total Digestible Nutrients) average desired range for silage corn is 62%-74%, the values all are within that range.

The minerals (**Calcium, Phosphorus, Potassium**) are within their respective average ranges.

The corn was mowed down on December 4th, 2023. We were able to work well into December due to unseasonably warm temperatures.



FUTURE CONSIDERATIONS

We discovered that corn is a hearty crop to use as forage. It was planted later than what is typical for corn and it was planted directly into the perennial crop from the previous years. We seeded a hybrid corn variety and early on it showed a good stand establishment. We also saw that the feed analysis showed the corn had the necessary requirements for a silage crop.

Observations for the corn biomass showed that the high fertilizer #1 had the largest biomass kg/m² and the low fertilizer #2 had the smallest biomass kg/m². It should be observed that the no fertilizer #1 was the second largest biomass kg/m². This data shows that the highest rates of fertilizer didn't necessarily equal the highest yield, even with no fertilizer a good yield was achievable. Still, the results show that corn can be a reliable crop in our area despite the challenges of late planting and unstable conditions.

In 2024, we plan to trial different corn varieties (grain and silage) and compare how they grow in the west-central region.

This information combined can help producers in the area make appropriate decisions about their farms with the goal of increasing productivity.

Alberta Soil Health Benchmark Project Update

Provided by: Dr. Yamily Zavala and Dianne Westerlund, Chinook Applied Research Association, February 2024

This project is supported by the Canadian Agriculture Partnership (CAP) Environmental Stewardship and Climate Change Program.

OVERVIEW

The Chinook Applied Research Association is heading a provincial initiative funded by the Canadian Agricultural Partnership (CAP) program, designed to generate a data base of soil parameters related to physical, biological and chemical indicators. A biological and physical baseline for provincial soils will provide a framework which can help define strategies for managing and improving the productive capacity, and sustainability, of our soils. Understanding and managing for a diverse micro-biological functional group underground may contribute to an overall healthier soil by improving soil aggregation, soil water infiltration and storage, as well as improved carbon sequestration. The improved aggregation stability will also contribute to enhanced carbon sequestration levels in the soil. Healthy soils produce healthy plants resulting in a higher quality food product. Knowing their soil health constraints will give Alberta producers a valuable tool for use in making strategic management decisions, and monitoring those practices, on their farms and ranches.

The Alberta Soil Health Benchmark study is led by CARA's Soil Health and Crop Management Specialist Dr. Yamily Zavala. Dr. Zavala was instrumental in the development of CARA's Soil Health Lab (CARASH Lab), the first farmer-focused lab evaluating physical and biological soil qualities in western Canada. The lab utilizes protocols from Cornell University and the former Canadian Soil Food Web Lab.

METHODS

Eleven of Alberta's applied research and forage associations participate in the soil health benchmark study, working with farmers and ranchers in several soil zones throughout the province. Each group documents field history and management information and uses the same protocols when collecting soil samples. Samples are received and processed through CARA's Soil Health Lab. Dr. Zavala supervises analysis of biological and bio-physical characteristics, including soil respiration rate, texture and wet aggregation stability, the level of active carbon rate and total and potential biological biomass. Analysis of chemical components are currently contracted to A & L Labs and the University of Alberta's soil lab determines the total organic carbon, carbon and nitrogen

levels. All information is being summarized into a data base which will help generate strategic management practices targeting specific regional soil constraints in the future. Monitoring (re-visiting) sample sites will help determine if those managements are working or not. Funding for the Benchmark project wrapped up in 2022, but further verification of management practices at over 200 of the original benchmark sites will be made through a new project supported by Results Driven Agricultural Research (RDAR) from 2022 through 2024.

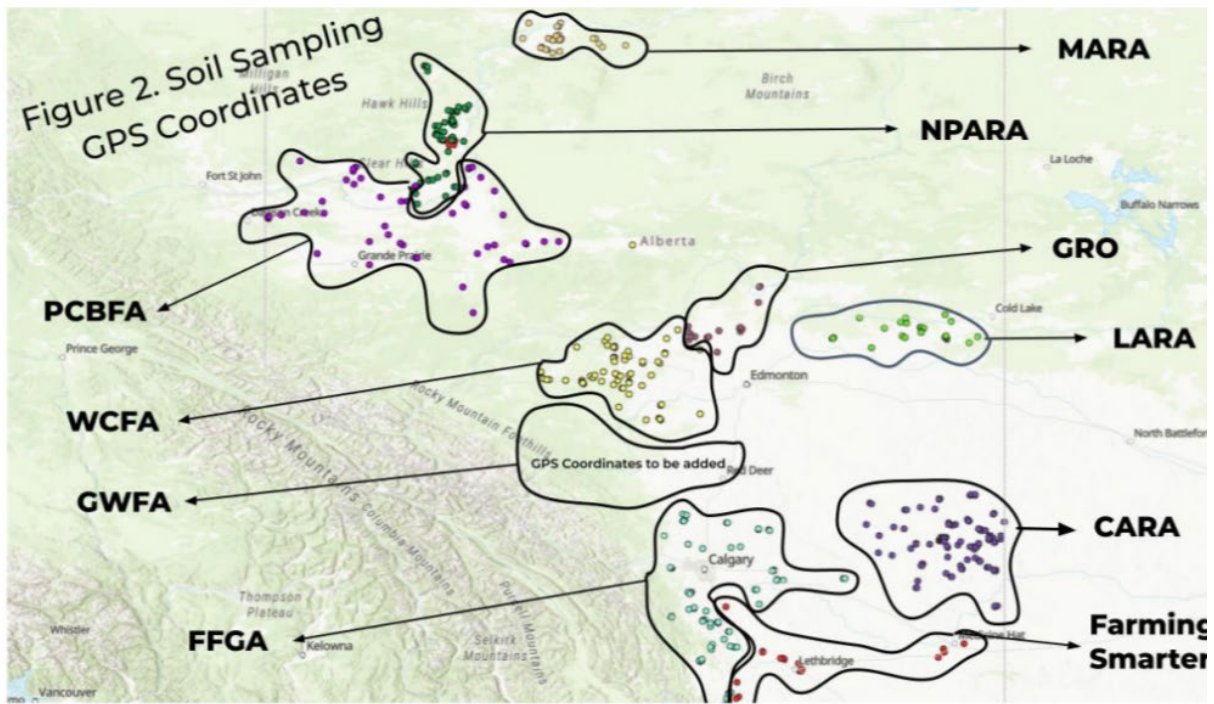
The CARASH Lab generated a comprehensive report for each site sampled, which is compiled and shared with the local association and landowners. The report captures a picture of the soil health and is a point of reference for comparison to future sampling or following management changes. It includes measurements of the individual soil indicators as well as a ranking of whether the measurement is an area of concern or constraint for over-all soil productivity. Suggestions for mitigation or improvement of problem soil components may also be added to the soil score card. Discussion of the soil health report cards have been the focus of several extension activities held by participating producer associations.

PROGRESS TO DATE

Eight sites in the FF region were re-visited in 2023. These sites were first sampled in 2020 and analyzed for on-site compaction, infiltration, and full biological analysis. Any changes observed in soil parameters will be correlated to management practices during the past three years. Although not all samples collected to date have been processed or added to the data bank, Dr. Zavala has observed a few trends from samples collected to date. Compaction and poor water infiltration are common concerns at many sites and are often associated with lower biological components. She has observed a great diversity of beneficial soil creatures including, protozoa functional groups, fungal hyphae and nematode feeding groups as well as predatory species. Each soil sample evaluated has its own '*biological signature*' with no two samples having the same biological '*fingerprint*'. The biology in some soils just needs to be '*woken up*' whether from adding diversity to the forage mix or crop rotation, maintaining green growth longer during the growing season or adding biological amendments to the soil.

FUTURE WORK

Eight additional sites that were first visited in 2021 will be re-visited in 2024. More specific data will be available in the coming months.



GPS sampling areas for 10 of the associations.



Extension



2023 Extension Highlights

As we moved forward from COVID-19, we were able to resume more in-person events, coupled with the convenience of offering virtual events as well. Our capacity was limited by staff availability; however, we offered exciting opportunities to learn from renowned experts in grazing practices and regenerative farming. We also came together as peers to learn from one another and share stories and experiences that built community and friendships.

We kept in touch with everyone through our newsletter publications, both printed and e-versions, as well as through regular email updates and our social media channels.

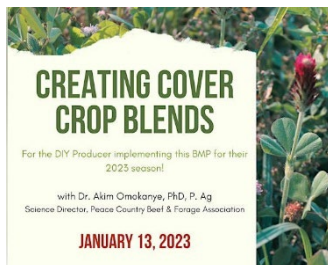
EVENTS HOSTED BY FARMING FORWARD IN 2023



Cattle Nutrition, Conditioning, and Genomics Workshop

DECEMBER 6, 2022

Courtney O'Keefe and John Basarab gave informative presentations on cattle nutrition and how genomics can help make decisions on cow-calf operations by improving feed efficiency, product profitability, environmental impact and food security. An Olds College and Lakeland College research team delivered a presentation on their research on the topic.



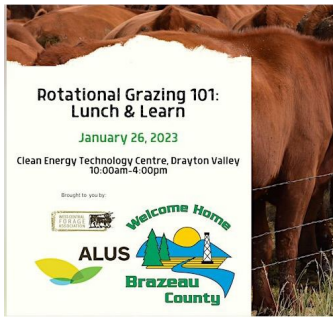
Creating Cover Crop Blends

JANUARY 13, 2023

This was a day of learning about the benefits of utilizing cover crops and species selection to create your own blend based on a producer's goals. Dr. Akim Omokanye presented the information with the Peace Region Living Laboratories.

Rotational Grazing 101

JANUARY 26, 2023



We discovered rotational grazing benefits and learned how to put together a grazing pasture plan. We discussed what support options were available to producers implementing this BMP in 2023 at this in-person workshop!

Management Alternatives for Soil Health

JANUARY 26, 2023



We discovered how plants use bacteria to obtain nutrients and how you can balance mineral nutrients for soil health.

Annual General Meeting

APRIL 27, 2023



The event was hosted at the Sangudo Community Hall. There were 23 attendees and 3 staff members.

Grazing School with Greg Judy

JUNE 19, 2023



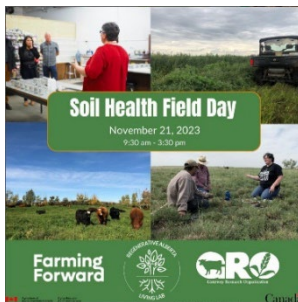
Hosted with GRO. We had 75 people attend an enlightening presentation by regenerative agriculture advocate Greg Judy. He discussed strategies to help increase profitability through grazing management and the use of fencing and watering. We took our learning outside for some hands-on demonstrations.



Cowboy Corn Day

AUGUST 22, 2023

Participants joined Farming Forward on a bus tour of 4 producer corn fields in Barrhead County to see how different producers choose varieties and manage their crops. There was also seed representatives present for seed variety discussion.



Soil Health Field Day

November 21, 2023

FF partnered with GRO to bring a producer-led discussion in the morning sharing knowledge on collecting and increasing soil microorganisms. Following the valuable discussion, we visited the AltRoot composting facility at the Westlock landfill, where 20,000 tonnes of organic waste is turned into compost every year. Dr. Kris Nichols from the Regenerative Living Lab presented soil sampling processes, measurements of soil health, and soil genomics.



Grant Opportunities for grain and livestock producers

November 28, 2023

This information session provided a review of the Resilient Agriculture Landscape Program (RALP) with emphasis on the Efficient Grain Handling, Water Program, On-Farm Value

Added Program, and Farm Technology grant funding options. We heard from a local producer about the beneficial management practices he has adopted and the difference they made in profitability and production on his farm.

2024 PLANNED EVENTS

- RALP information Session (webinar) – January
- RALL: Overcoming Challenges in Weed Management in Regenerative Agriculture (Barrhead County) – February

- Winter Watering Tour (Lac Ste. Anne County) – February
- Ladies Ranching Retreat (Parkland County) – February
- Livestock Emergency Planning Info Session (Lac Ste. Anne County) – March
- Avian Flu Info Session (webinar) - March
- Environmental Farm Plan session (Yellowhead County) – April
- Environmental Farm Plan Session (Woodlands County) – April
- Commercial Beef Cattle Genetics (Parkland County) – April
- Farming in drought (Barrhead County) – April
- Chicken 101 (Strathcona County) – May
- Farming in Drought (Brazeau County) – May
- Farming in Drought (Yellowhead County) – May
- Youth Farm Safety Day (Yellowhead County) – May
- Pond Days (Woodlands County) – May
- Pond Days (Yellowhead County) – June
- Pond Days (Parkland County) – June
- Pasture walks (4 events) – July
- Plot Tours (3 events) – August
- Corn Tour (Lac Ste. Anne County and/or Barrhead County) – August/September

And more:

- Farm technology webinar series – November
- Environmental Farm Plan Session (Other counties)
- Manure Compost Info Session – Tentative



Other 2024 Plans

In 2024, we will be launching a weekly newsletter with important information for producers in our area. You will stay up to date with the most current activities and research in the area. Some of the topics will include:

- Events we are hosting.
- Event shoutouts for non-FF events happening in our area.
- Newsworthy shares – articles and links with important information.
- County Highlights – county facts, producer and business highlights and photo contest.



Website Launch www.farmingforward.ca

In 2024 Farming Forward will be launching a new website under the new Farming Forward Branding.

As it is developed, this website will have aspects like a member's section, event info, a blog of current events, and many others.



Conservation



Stewardship Alliance for Conservation Agriculture (SACA)

Enhancing Stewardship and Conservation within Agriculture



What is the Stewardship Alliance for Conservation Agriculture (SACA)?

The Stewardship Alliance for Conservation Agriculture (SACA) is a partnership between WCFA, Yellowhead County and Woodlands County. This partnership has been in place since 2012, following a restructuring of the previous group known as the West-Central Conservation Group (WCCG).

Through this partnership, our goal is to assist the agricultural community to find practical, environmentally sustainable practices and raise awareness through workshops, information sessions, demonstrations and projects.

Through this partnership we are able to deliver programming to support local producers in achieving their stewardship goals, which includes:

- Supporting producers with the Alberta Environmental Farm (EFP) program
- Providing information and support to producers in accessing funding through programs such as the Canadian Agricultural Partnership (CAP) program
- Supporting integrated weed control through delivery of biological control agents for Canada thistle.
- Supporting youth education through initiatives such as Pond Days and the Classroom Agriculture Program.
- Developing projects and initiatives to support environmental stewardship in our local agricultural communities
- Providing learning opportunities to local producers on a variety of stewardship related topics

SACA Programs- 2023

ALBERTA ENVIRONMENTAL FARM PLAN

As part of the SACA partnership, FF employs a trained EFP Technician to assist with the delivery of the Alberta Environmental (EFP) program. We will be expanding our capacity to provide EFP assistance by training two more technicians next year.

Why Do an EFP?

Maintaining a healthy environment is essential to the success of Alberta's agricultural producers. The Environmental Farm Plan (EFP) program helps you identify and address environmental risks in your operation. It will also increase your understanding of legal requirements related to environmental issues. Protecting water, air and soil quality is key to the sustainable production of crops and livestock and to leaving a healthy and productive farm for the next generation. An EFP will identify what you are already doing well and pinpoint where improvements can be made. By addressing these risks, you increase operational efficiency while reducing farm costs, which results in increased profit for you. With your EFP completion certificate, you become eligible for some funding under the Sustainable Canadian Agricultural Partnership and the Resilient Agricultural Landscape Program. Pairing environmental stewardship with agricultural production is also crucial in the marketing of your products. Consumers are increasingly concerned about the safety and quality of the food they eat and how that food is grown/raised. Sustainable sourcing is becoming a requirement of many major food purchasers, from manufacturers to restaurants. Having an EFP demonstrates to the public, government, lenders and/or investors that you are managing your environmental risks.

The EFP Process

1. Register online at www.albertaefp.com or contact a FF technician directly to set up your account.
2. Your EFP technician will be available throughout the process to help complete your EFP workbook (online)
3. Once you have finished your EFP, your technician will review it. Once complete you will receive a Certificate of Completion. If, during the review process, more work is required the technician will offer advice and assistance to ensure approval.
4. You are encouraged to begin implementing the actions you identified in your Action Plan as part of completing your EFP, as well as continuously update your EFP as you make changes on-farm.

EFPs in the FF Region

In 2023, we assisted with 10 new EFPs throughout the region, along with continuing support for a number of producers who began their EFPs in previous years.

Often, as we work through the EFP process with producers, we are able to provide information on available funding through the Sustainable Canadian Agricultural Partnership (SCAP) program or the Resilient Agriculture Landscape Program (RALP). As part of our mission to support producers with sustainability initiatives we are able to offer some assistance with applications to these programs as well. For the latest information on available funding through SCAP visit <https://www.alberta.ca/sustainable-cap>



YOUTH EDUCATION PROGRAMS

Typically, each year we work with local schools and our SACA partners to host a number of Pond Days in the region. This program offers an interactive opportunity for students in Gr. 4/5 to learn more about a variety of stewardship topics, including aquatic and soil health, wildlife, water quality, invasive species, riparian health and more. We hosted a booth at Pond Days in Yellowhead and Woodlands Counties.

In years past we have also volunteered with the Classroom Agriculture Program, to deliver presentations related to Agricultural topics to Gr. 4/5 students at a number of local schools. In 2023 we visited 3 schools.

Additional Programs Supported by FF & SACA

ALUS PARTNERSHIP ADVISORY COMMITTEES

The ALUS program works with farmers to produce valuable ecological services on Canadian farmland. More specifically, ALUS helps farmers and ranchers restore wetlands, reforest, plant windbreaks, install riparian buffers, manage sustainable drainage systems, create pollinator habitat and establish other ecologically beneficial projects on their properties. What's more, ALUS provides per-acre annual payments to ALUS participants to recognize their dedication to managing and maintaining all the ALUS projects on their land.

As ALUS is a community driven program, each active ALUS community establishes a local Partnership Advisory Committee (PAC) to direct local programming. The PAC includes a broad spectrum of community members, such as representatives from local environmental groups, local government agencies and local industry. Approximately 50 percent of each PAC is made up of farmers.

FF has been a member of the ALUS Brazeau PAC since 2016 and will continue to support this program moving forward. In 2020 we joined Parkland County's ALUS PAC as well. We appreciate the opportunity to support these local programs.

We would also like to note that although we are not members of their PACs, we work closely with and are strong supporters of the other ALUS programs in our area, which include ALUS Lac Ste. Anne and ALUS Leduc-Wetaskiwin.



In 2023, ALUS became the administrator of the Resilient Agricultural Landscape Program (RALP). This is a funding opportunity for producers interested in conserving and enhancing the environmental resiliency of their agricultural landscapes. RALP's objective is to accelerate the adoption of Beneficial Management Practices (BMPs). For more information regarding RALP call 310-FARM or 1-866-310-RALP or email info@RALP.ca.

If you are interested in the ALUS program we encourage you to contact your local ALUS coordinator (alus.ca/communities).

APPENDIX

BEEF RATION RULES OF THUMB AGRI-FACTS



October 2004

Agdex 420/52-4

Beef Ration Rules of Thumb

This factsheet can both guide producers through a feed test and help them understand the results.

With a feed test in front of you, look at the following rules and compare them to the feed test. Remember, these are rules of thumb, which means they hold true most of the time, but variations in management and cow type will affect the end result.

These rules of thumb should not be considered a replacement for balancing rations with proven software, but rather an aid to understand the feed and where it fits in the management.

Rules of Thumb

Dry matter

Always refer to the "dry matter" numbers. These numbers have the moisture factored out and allow the comparison of all feeds, from silage to grains.

Crude protein

Protein is a building block. The Beef Cow Rule of Thumb with protein is 7-9-11, which means an average mature beef cow requires a ration with crude protein of 7 per cent in mid pregnancy, 9 per cent in late pregnancy and 11 per cent after calving. The method to monitor protein in terms of cow performance is to look at the manure – high levels of undigested fibre in the manure indicate low protein.

Crude protein with feeder calves

The Feeder Calf Rule of Thumb is 14-12-10. A feeder calf from 550 to 800 lbs needs a ration of 14 per cent protein, from 800 to 1,050 lbs needs 12 per cent protein and from 1,050 lbs to finish needs 10 per cent protein. An implant program will create variations to this rule, so check with the implant manufacturer.

Energy

Energy gives the ability to use the building blocks for growth and other productive purposes. Learn one of the six measures for energy and stick with it. Using Total Digestible Nutrients (TDN) per cent, 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 per cent in mid pregnancy, 60 per cent in late pregnancy and 65 per cent after calving.

Energy can be monitored in the beef cow by watching BCS; low energy rations result in a loss of BCS. Other energy units of measure include Digestible Energy (DE), Metabolizable Energy (ME), Net Energy for lactation (NEL), Net Energy for maintenance (NE_m), and Net Energy for gain (NE_g), and producers can develop their own rules for these measures if the need arises.

Calcium to phosphorous ratio

The calcium to phosphorous ratio (Ca:P) for a mature beef cow should be within the range of 2:1 and 7:1, assuming actual required grams of each are adequate. Using a feed test, the ratio is calculated by dividing the dry matter Ca (%) by the dry matter P (%). Ratios outside this range need to be addressed using feed blends or commercial minerals.

Minerals

On an average feed analysis sheet, two other related minerals are reported: magnesium (Mg) and potassium (K). These two minerals, in combination with calcium (Ca), make up the tetany ratio, which is $K/(Mg + Ca)$. Cowbytes, which is a ration balancing software program available through Alberta Agriculture, Food and Rural Development, indicates that this ratio should not exceed 2.2:1.

*Rules of Thumb
are not a
replacement for
balancing rations
with proven
software*

The combination of high K (**Rule of Thumb** – over 1.75%), and/or low Ca (**Rule of Thumb** – under 0.6%) and low Mg (**Rule of Thumb** – under 0.3%) can lead to animal performance issues. Because this ratio involves three different numbers, producers are encouraged to look at the three figures both individually and as a ratio to determine if the need for caution exists.

With respect to commercial minerals, an average **25 kg bag of minerals will last about 1 week for 50 cows**. Read the label for specific feeding rates.

Salt

On many feed analysis sheets, only Sodium (Na) is reported. **Rule of Thumb** says that **Na x 2.5 equals NaCl (salt)**.

Salt Rule of Thumb: if the feed analysis shows that Na is over 0.1 per cent, which equates to salt over 0.25 per cent, livestock will receive all their salt requirements from the feed and therefore will not consume commercial minerals with added salt. High salt levels are very prevalent in cereal greenfeed and their associated feed analysis.

The next step

Once producers understand the quality of their individual feeds, the next step is to determine the quantity of feed required, both for individual animals per day and for the herd for the winter. Several Rules of Thumb apply to feed quantity.

Rule of Thumb for consumption

All beef cattle will consume approx 2.5 per cent dry matter (DM) of their body weight per day of average quality feed. For example, a 1,000 pound cow will eat 25 lbs of dry matter feed per day. Moisture and feed waste must be factored in on top of this number.

The following table, taken from Cowbytes, shows different consumption levels based on forage quality (Table 1).

Table 1. Forage intake guidelines [as per cent of body weight (BW)]

	Straw and poor forage	Medium quality forage	Excellent quality forage
Growing and finishing cattle	1.0%	1.8 to 2.0%	2.5 to 3.0%
Dry mature cows and bulls	1.4 to 1.6%	1.8 to 2.0%	2.3 to 2.6%
Suckled cows	1.6 to 1.8%	2.0 to 2.4%	2.5 to 3.0%

Cold stress

Under **cold stress**, for every 10 degrees Celsius (C) below minus 20 degrees C, feed 3 kg of hay or 6 kg of silage or 2 kg of grain AS FED to cows.

Rule of Seven: for quick calculation purposes, this rule says that in an average operation, a combination of tons of silage, average size round bales of hay and average size round bales of straw all need to add up to **seven per mother cow**. For example, you may need three tons of silage, two bales of hay and two bales of straw per cow per winter. Cow size, length of winter-feeding season and feed wastage contribute to variations in this rule.

Backgrounding feeders calves require, as a **Rule of Thumb**, an additional 3 tons of silage or 1 ton of hay per 90 days of feeding.

Feed wastage

With respect to feed wastage, the **Rule of Thumb** says that if you see feed on the ground, you have 15 per cent waste. Many operations have over 20 per cent feed waste every winter, and the producers may not realize that this waste costs in excess of \$40/cow.

Prepared by:

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