

Grow With Us

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Full Speed Ahead as New Research Investigates Polyculture concepts

by Alyssa Krawchuk and Angelica Ouellette, LARA

A new year means new opportunities and challenges and, in agriculture, this is no different. Extreme weather conditions, namely drought, have brought water and soil conservation to the forefront of conversations as we head into the growing season. Not only are these conversations important while in the midst of drought conditions, but they are also essential when recovering from and preparing for dry conditions in the future.

A practice that has been gaining significant popularity is polycultures or the strategy of growing multiple crops in the same field at the same time. These crops can be utilized for either grain or forage production and are often used as an extended grazing strategy by livestock producers. The benefits of polycultures are well established in terms of soil health and conservation. However, there are many aspects of polycultures that are not well understood.

Lakeland Agriculture Research Association's new Research Scientist Maria Angelica Ouellette is starting two new trials at LARA this year to investigate different aspects of the polyculture concept: allelopathy and row spacing.



Impact of allelopathic cover crops and its termination method in cash crops grown subsequent season.

This experiment is based on the concept of allelopathy. A fact in agriculture is that more than 60% of weed management is through recurring herbicide applications, leading to increased instances of weed resistance. Consider the detrimental impact herbicide resistance weeds such as Kochia can have on production economics.

Allelopathy is the influence of one plant on another, where toxic secondary metabolites are released and inhibit surrounding plant growth. When managed properly, the metabolite released can be a useful alternative weed management strategy. Allelopathic cover crops not only reduce weed populations, but also maintain soil stability.

As part of an integrated weed management strategy, this study aims to explore the allelopathic effects of rye, ryegrass, hairy vetch and sunflower as monocrops and as two-way mixes on the weeds and subsequent seeded crops such as canola, field pea and wheat.

This study is preliminary, because a) weed species and number of individuals per species will be evaluated within the allelopathic cover crop as well as the subsequent cash crops such as wheat, canola and peas, and b) it aims to evaluate if allelopathy is affected if cover crops as well as cover crop mixtures are roller-crimped or incorporated in the soil before the cash crop is seeded.

To learn more about these projects contact Angelica Ouellette at angelica@laraonline.ca or (780) 812-1392.

Evaluating row spacing in inter seeding and intercropping systems for weed management.

This experiment is aiming to observe the effect of distance between seeded rows in polyculture practices. Polyculture is an agricultural strategy to reunite two crops in the same field area. Although interchangeable, intercropping is the practice where two or more crops are sown in alternate rows and interseeding (also known as mixed intercropping) is sowing two or more crops within the same seeding row.

The advantages of intercropping versus monocropping are: (a) weed suppression, (b) yield increase and stability and (c) nutrient cycling if crops are seeded as interjected crops. Such advantages vary according to distance between seeding rows of the different crop species. However, current research falls short in describing how row distance affects weeds and yield of interseeding systems.

This experiment will consist of eight treatments as follows: monocrop treatments of either wheat or field pea, an intercrop (alternate rows of wheat and field pea) and an interseed (wheat and field pea in the same seeding row). Each of these treatments will have seeding rows set either at 4.5 inches or 9 inches apart. Thus, this experiment aims to compare intercropping and inter seeding wheat and peas at different seeding row distances and observe how land equivalent ratio (LER) and weed population are affected.

This is the first study of its kind in Northeastern Alberta and thus will provide a stepping stone knowledge in the quest towards agricultural stability.



Cutting Edge Project Has Farmers and Ranchers RALLYing for Soil in Alberta

by Barb Sheldon, Regenerative Alberta Living Lab

More than 100 innovative Alberta farmers and ranchers are rooting around and learning more about the many soil-based benefits their farms are providing to society, thanks to the Regenerative Alberta Living Lab (RALL).

Funded generously by Agriculture and Agri-Food Canada (AAFC), RALL is being led by the Food Water Wellness Foundation (FWWF) and Alberta Conservation Association (ACA) with Alberta farmers and ranchers and producer and research organizations. The RALL project is targeting Beneficial Management Practices (BMPs) (i.e. regenerative tools and practices) and aims to quantify and validate the qualitative benefits and outcomes on ranches and farm fields.

The key is engaging farmers and ranchers at every step in the project, so producers will move to adopt practices that increase resiliency and soil regeneration on the over 50 million acres of agricultural land in Alberta by increasing carbon storage, reducing fertilizer use, and enhancing ecosystem services through BMPs and new agricultural practices.

The RALL will use producer input, soil sampling, geospatial information and analyses, and machine learning as a living laboratory to measure the impacts of on-farm innovation on soil health, productivity, resilience and the producer's bottom line. The RALL will develop landscape level soil maps (i.e. heat maps) to quantify carbon storage (see Figure 1); other soil chemical, physical, and biological soil health parameters; and the environmental benefits of soil-focused regenerative agriculture.

Participating producers will provide legal land descriptions or polygons in Google Earth to identify areas of interest (i.e. fields, pastures, or rangeland) on their farm or ranch for FWWF to create a sampling plan for each location.

A preliminary soil map will be generated from data collected for the pilot study as well as analysis of over 60 layers of geospatial data. Geospatial data is any type of data with a geographic component or location information and can be derived from satellite imagery, remote sensing, GPS, etc.

DEEP DIVE: Life in the Living Lab: Pedometrics and Sampling

Each sampling plan is rooted in pedometrics which is the study of soil as part of the natural environment and uses quantitative mathematical and statistical methods to understand the organization or classification of soils based on their distinguishing characteristics. In RALL, pedometrics will accurately predict responses of a soil-plant ecosystem to soil management and generate maps of soil properties for on-farm decision-making. The maps illustrate how soil properties and processes vary over space and time.

After the sampling points are cleared by utilities and approved of by the producer, the FWWF Soil Sampling Team uses GPS units to go to the sampling points in the field identified in the sampling plan. The team uses a skid-steer mounted vibrating hydraulic sampler to a 1-meter depth where possible (Figure 2). By using a skid-steer, the Sampling Team can reach sampling points even on steep slopes or far from a road with minimum disturbance. In addition to collecting the soil samples, the Team records air temperature, soil temperature at four depths of the soil core, core length and dimensions for accurate calculation of bulk density and takes a minimum of six photographs at each sampling point including all four directions around the point, the point itself, and the soil core for future assessment of plant composition and management parameters. Soil cores are then wrapped to maintain integrity and transported to the FWWF laboratory near Olds, Alberta.

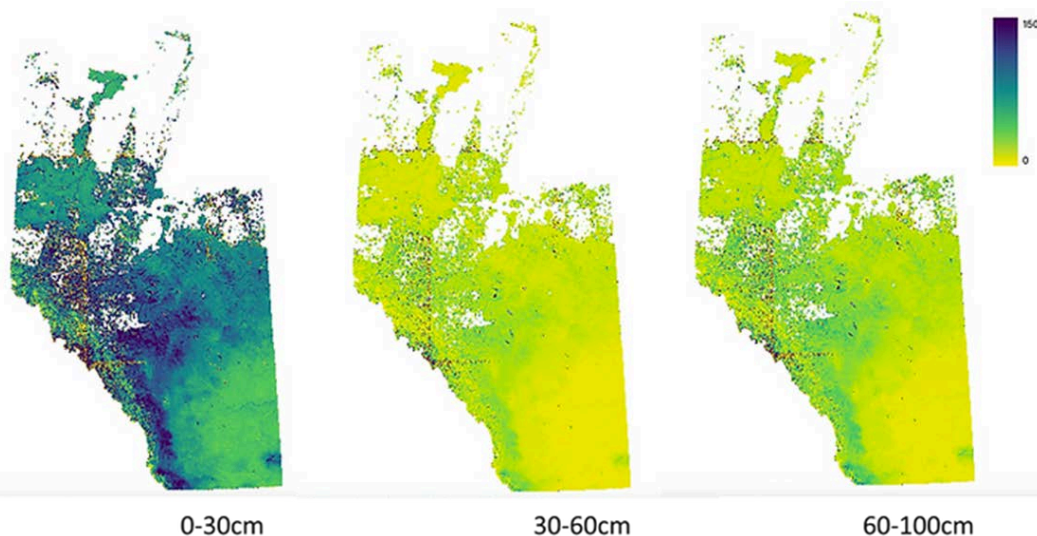


Figure 1. Soil map showing carbon stocks (tonnes/hectare) at 0-30, 30-60, and 60-100 cm soil depths for the entire agricultural zone in the province of Alberta.

What types of measurements are made in the laboratory?

Wrapped soil cores are stored in a cold room maintained at 4°C until they can be separated into different depth fractions – 0-15, 15-30, 30-60, and 60-100 cm – and analyzed for several soil health parameters (Figure 5). Before cores are separated into the four fractions, any plant material on the surface is removed and the length of the core is measured as well as how deep the roots go, the depths and colours of the soil horizons, and temperatures for each fraction. The core is separated into up to four depth fractions and subsamples are removed to measure oven dry weight at 105°C and for DNA extraction. The sample for DNA extraction is

at -20°C until DNA is extracted by Dr. Monika Gorzelak's Agriculture and Agri-Food Canada laboratory in Lethbridge, AB with soil bacteria and fungal populations identified and quantified. Gravel pieces larger than ~5 mm and significant roots weighing more than 1 g are removed from each soil fraction with the wet and dry weights of gravel and roots measured along with gravel volume. Subsamples from each depth fraction are then air-dried at 40°C and then analyzed for texture (i.e. sand, silt, and clay content), the percentage of stable 1-2 mm aggregates, pH, EC (i.e. electrical conductivity), total and organic carbon, and macro-and micro-nutrient content.

All this data will be combined with the geospatial data used to generate the field maps and additional geospatial data to create predictive soil maps and estimate carbon, nitrogen, clay content, soil aggregate stability, microbial communities, etc. across farms, ranches and the entire agricultural zone of Alberta with a resolution of 10-25 meters. This will allow participating farmers and ranchers to better understand regenerative management practices and tools precisely and accurately with the measurable soil health parameters such as soil organic matter, nitrogen or other plant nutrient concentrations, soil porosity and structure. This will help farmers and ranchers mitigate risks, reduce production costs by precisely and efficiently using inputs, and potentially increase productivity while reducing insurance indemnity payments and fiscal losses. This data also will help to create

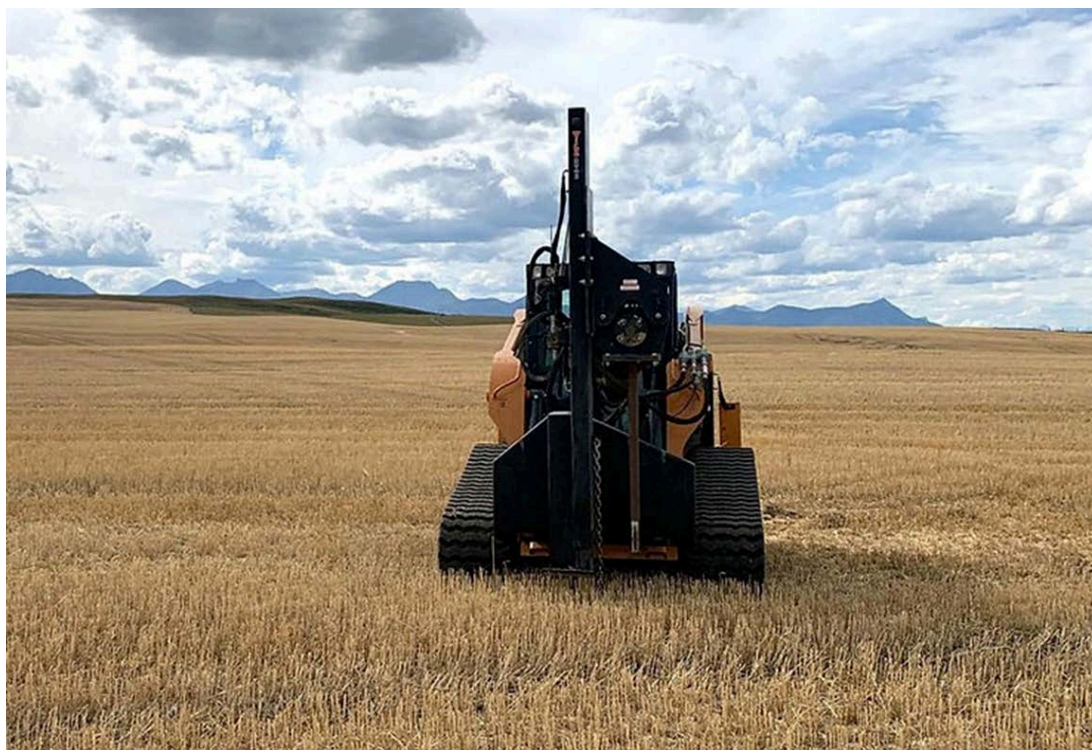
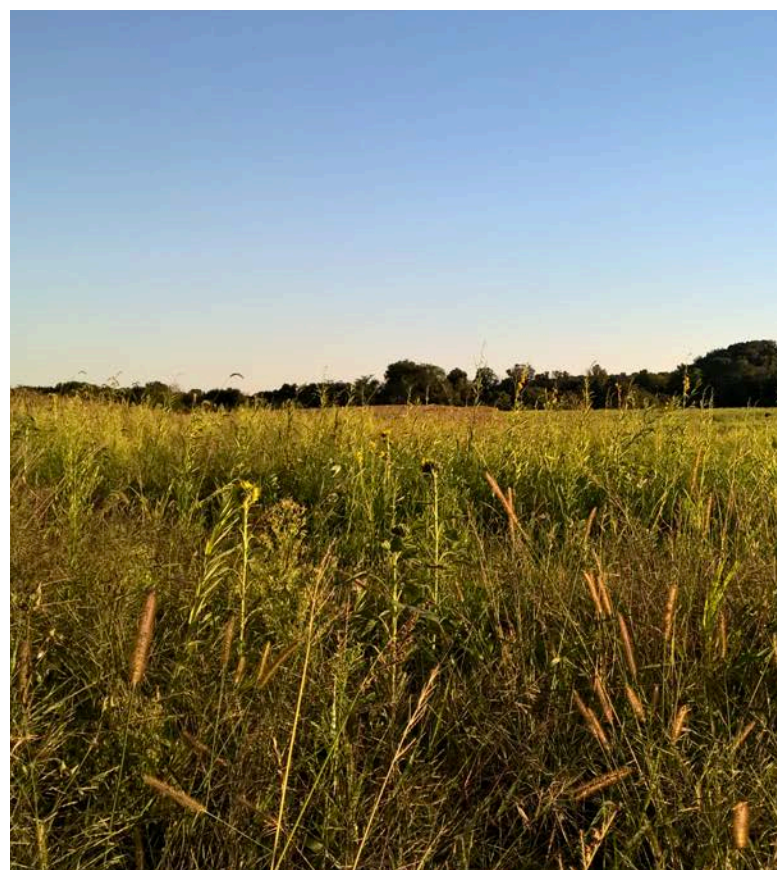


Figure 2. Skid-steer and sampling probe used to collect 1-meter deep soil samples at each sampling point.

carbon crediting, GHG emission reduction, and ecosystem services programs based on measurable data and measured results.

For more information on the Regenerative Alberta Living Labs (RALL) project visit www.regenlivinglab.org.



Investigating the Performance of Two-Row and Six-Row Forage Barley Mixtures

by Momna Farzand, LARA

The production of high-yielding and high-quality forage has been a big challenge for Alberta livestock producers because of severe drought conditions across multiple regions of province since 2021. Water stress and associated crop and pasture failures leave many producers producing insufficient quantities of forage for livestock operations. The shortage of available forage indicates that producers may need to adopt new strategies to get the most yield possible when water is limited due to drought conditions. Perennial forages (grasses or legumes) create a good basis for livestock farming systems, but many perennial forages go dormant as a survival mechanism under drier conditions (Taleb et al., 2023). Annual forages are known to use water more efficiently than perennial forages and could be utilized as additional livestock feed during times of limited rainfall and perennial pasture shortage (McCartney et al., 2009; Neal et al., 2011). Barley (*Hordeum vulgare* L.) is one of the most widely grown annual forage crops in western Canada because it is highly adaptable to diverse growing conditions. It is more water use efficient than other small grains, making it a valuable annual forage during moisture-stressed periods (Schaffer et al., 1993). In addition, it has superior forage quality among small grain cereal species examined (Baron et al., 2000). In 2020, approximately 149,000 hectares of silage barley was harvested, with the total estimated production of 1.8 million tonnes in Alberta (Shooshtarian, 2021).

Anecdotal accounts from cattle producers in Northeastern Alberta have indicated that higher forage yields may be obtained when growing two-row and six-row barley mixtures.



However, there have been no assessments performed in an applied research setting to substantiate this claim in Northeastern Alberta. A field study conducted by Gill et al. (2013) in the Peace region of Alberta revealed that two-row barley are superior to six-row barley in terms of forage yield and nutritional quality. Therefore, we hypothesized that mixing and planting a suitable ratio of phenotypically contrasting barley varieties would increase forage biomass and improve the overall nutritional profile of a blend.

To test this hypothesis, four new barley varieties in the Lakeland region of Alberta, 2 two-row (AB Maximizer and AAC Lariat) and 2 six-row (AB Tofield and AB Standswell), have been seeded in a field trial in Fort Kent (54°18' N, 110° 37' W) with the following principal objectives.

- To determine the performance of two-row and six-row barely pure stands as well as their mixtures in two seeding ratios (1:1 and 3:1) for forage yield.
- To determine the performance of two-row and six-row barely pure stands as well as their mixtures in two seeding ratios (1:1 and 3:1) for forage nutritional quality.

The successful completion of this trial will provide producers with a simple tool to increase forage yield by utilizing the intraspecific diversity of barley varietal mixture during hot and dry years. Comparing different forage barley mixture ratios in this study will help livestock producers to select a suitable barley mixture in terms of yield and nutritional quality. The high-yielding and high-quality forage barely mixture stand could be grazed when perennial pastures are resting, baled, or chopped.

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Bringing the Soil Back to Life Through Compost

by Alyssa Krawchuk, LARA

The world's supply of soil is finite and increasing degradation, poor management and urbanization is further limiting the area of fertile soils across the globe. The Food & Agriculture Organization (FAO) of the United Nations has determined that "the current rate of soil degradation threatens the capacity to meet the needs of future generations."

Farmers and ranchers are more closely connected to the soils than most and soil plays a fundamental role in agriculture, including nutrient cycling, water filtration and serving as the foundation for all food and feed production.

Soil is a living, breathing ecosystem that, when healthy, can function without the need for off-farm supplements. A teaspoon of healthy soil can contain more microorganisms than there are people on earth. When this ecosystem is healthy,



each of these types of organism plays a crucial role in the ecosystem, supporting the growth of healthy plants and suppressing disease.

How can we bring life back into our soils?

A molecular biologist and research scientist at the University of New Mexico, Dr. David C. Johnson, has developed a system that reintroduces beneficial microorganisms to soils through a biologically enhanced compost. This is done through the Johnson-Su Bioreactor, which can be built and done on your own farm with minimal cost and materials required.

The compost created through the use of the bioreactor can be applied to soils of all types, including agricultural land and vegetable gardens. Some of the benefits of Johnson-Su compost include:

- Increases soil carbon sequestration
- Increases crop yield
- Increases soil nutrient availability
- Increases soil water-retention capacity
- Produces biologically diverse compost
- Produces nutrient-rich compost
- Results in a low-salinity compost
- Improves seed germination and growth rates

SOIL BUILDERS SCHOOL with Dr. David Johnson and Hui-Chun Su

**JUNE 27, 2024
FORT KENT HALL**

Dive into the innovative world of soil biology with our live demonstration on how to build your very own Johnson-Su Bioreactor.

Developers of the Johnson-Su Compost Bioreactor will share the details on creating a fungal-dominant, biologically diverse compost inoculant to increase farm and ranch profitability with better plant, soil, and ecosystem health.

AGENDA

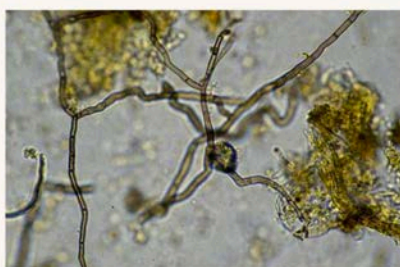
- 9:00 am - Coffee & Registration at Fort Kent Hall
- 9:30 am - Presentations by Dr. David Johnson and Dr. Yamily Zavala
- 12:00 pm - Lunch
- 1:00 pm - Bioreactor Construction at LARA Fort Kent Research Farm
- 4:00 pm - Wrap-up

COST

- \$30 (lunch included)

REGISTRATION

- www.laraonline.ca/events
- (780) 826-7260



No Till Benefits: Conserving Water and Drought Resistant Gardening

by Kim Ross, Rosedale Farm

I have seen a lot of posts on Facebook gardening groups with concerns about water for the upcoming gardening season. With declarations of droughts already in place before the growing season even starts, and warnings about how severe the wild fire season will be, I understand the concern about having enough water to grow a garden.

I have a game changing tip for anyone gardening in an area struggling with drought.....move away from traditional gardening to no till growing!



My drought resistant garden that produces thousands of pounds of vegetables with no additional watering other than what falls as rain or snow!

We are already doing it in agriculture, farmers grow their cash crops using low or no till methods, so why are gardeners still heavily tilling their soils?

We are already doing it in agriculture, farmers grow their cash crops using low or no till methods, so why are gardeners still heavily tilling their soils?

Tilling soil causes any moisture in that soil to be turned over. This increases evaporation of that moisture from the soil. In other words, every time you till your soil, you lose water from it.

Tilling soil always destroys soil structure, this is the little lumps and bumps or aggregates that exist in healthy soil. The more aggregate structure there is in healthy soil, the more that soil has room to hold water. These aggregates don't fit tightly together and the space in between them results in a pore space where water can exist. How do you get more pore space? Reducing tilling as it breaks the aggregates down into smaller and smaller pieces resulting in compacted soil – or soil that has very little pore space.

Soil aggregates create pore spaces in the soil. These do not sit tight against each other so water has space to sit in soil! Organic matter in the form of compost helps to stick these soil aggregates together.

Tilling can also rip up the plant's vast root system and bring weed seeds that naturally exist in our soils to the surface. When

these seeds that have been lying dormant in the dark of the soil are exposed to sunlight near the surface, they germinate. Isn't that wild? We till to combat the weeds but the very act of tilling brings more weeds to the party!

The next step is to add mulch; leaves and grass clippings shredded up by a mulching lawn mower, well aged straw or wood chips work as effective mulches. Many of us on the prairies have very dark soils. Dark soils heat up super fast in the summer sun – think of wearing dark clothing versus light clothing on a hot day. If we put mulch over our soils, the soil can't heat up. This means our plant's roots are much cooler and the plant is not working so hard to cool itself through the hottest part of the day. Why is this important? If the plant is working at cooling itself, it isn't working at producing us vegetables! In addition to that, the warmer the soil, the faster the water evaporates from it! Think of a pot of boiling water, if we put a lid on it, that pot doesn't boil dry! Mulch is effectively putting a lid on evaporation of soil moisture! This allows us to keep the moisture right where we need it!

Bare soil heats up with the ambient temperature which can increase evaporation of moisture of the soil. The high, sustained winds we experience on the prairies can contribute to drying out of the soil. We water our gardens only to have

the warmth and wind dry it out. Mulch stops this!

Climate challenges affect how we receive rain on the prairies, instead of gentle rain falls that last for days, we are getting more severe storms that are dropping 1" of rain in 20 minutes. The water is moving very fast and if our soils are dry or crusted from lack of moisture, fast moving water isn't slowing down to soak in. Mulch will help prevent that soil crust and it will help slow that water down so it stays where we need it most, on our gardens instead of running off to the side!

The use of compost in our gardens can also aid in retaining moisture in our gardens. Compost is organic matter and this serves as the "glue" if you will that helps bind soil particles together into those lumps and bumps or aggregates that create pore spaces! If you have poor soils damaged by erosion, heavy tilling or high clay or sand soils, additions of compost are going to help improve the damage or quality of the soil.

This isn't an overnight fix as it takes time for the soil to build up aggregate structure. The first year I converted, I water far less than I did with a traditional garden. The second year, I only had to water my celery which requires a lot of water. By the third year, I didn't water a single time and that was the first year of drought in my area. By the third year of the drought, so my fifth year in a no till garden, I could still pull back the mulch and ball up my soil as it had so much moisture in it.

My garden is now drought resistant! It grows solely on the moisture that falls as snow or rain without any attention from my watering can!



On April 27, 2024, Lakeland Agricultural Research Association (LARA) hosted a No-Till Gardening Workshop with Kim Ross from Rossdale Farms.

The day saw Kim Ross demonstrate to over 65 local attendees the ins and outs of how to convert a conventional garden space into a water catching, weed suppressing no-till garden. Thank you to everyone who attended and assisted in establishing a no-till garden plot at the LARA Fort Kent Research Site. We are looking forward to showcasing it throughout the growing season and comparing it to our conventional garden plot!

If you are interested in viewing the no-till garden plot in Fort Kent, reach out to us at (780) 826-7260.

If you are interested in learning more about Rossdale Farms, please reach out to Kim Ross through her site at <https://rossdalefarm.ca/contact/> and follow her Facebook page!

Sprayers 101: Mode of Action and Spray Quality

by Tom Wolf, *Sprayers101*

The decision on which application method is best for herbicides boils down to two main factors: (a) target type and (b) mode of action. In general, it's easier for sprays to stick to broadleaf plants on account of their comparatively larger leaf size and better wettability compared to grassy plants. There are exceptions, of course – at the cotyledon stage, broadleaf plants can be very small and a finer spray with tighter droplet spacing may be needed. Water sensitive paper is a very useful tool to make that assessment. Imagine if a tiny cotyledon could fit between deposits – that could be a miss!

Some weeds are also more difficult to wet, and those may also need a finer spray or a better surfactant for proper leaf contact. An easy test is to apply plain water to the leaf with a spray bottle. If the water beads off or the droplets remain perched on top in discrete spheres, the surface is considered hard to wet. Most grassy weeds are hard to wet, while most broadleaf weeds are easy to wet.

Grassy weeds are an especially difficult target because they have smaller, more vertically oriented leaves, and almost without exception are more difficult to wet than broadleaf species. All these factors call for finer sprays for effective targeting and spray retention.

Broadleaf weeds usually have more horizontally oriented leaves which also happen to be larger. As a result, they can intercept larger droplets quite efficiently.

There are about thirty mode of action (MOA) groups among the herbicides with about ten accounting for the majority in Canadian prairie agriculture. It's probably an oversimplification to categorize them into just two groups – systemic and contact. But that grouping goes a long way to making an application decision.

Contact products (MOA Group 5, 6, 10, 14, 22, 27) must form a deposit that provides good coverage. Good coverage is an ambiguous term that basically means that droplets need to be closely spaced and cover a significant proportion of the surface area because their

physiological effects occur under the droplet, and don't spread far from there. One way to generate more droplets is to reduce droplet diameter, another is to add more water. A reasonable combination of both is ideal because simply making droplets smaller creates issues with evaporation and drift.

Systemic products (MOA Group 1, 2, 4, 9) will translocate within the plant to their site of action after uptake. As a result, coverage is less important as long as sufficient dose is presented to the plant. In practice, this means coarser sprays and/or less water may be acceptable.

When two factors are combined, either in a tank mix or a weed spectrum, the more limiting factor rules. Application of a tank mix or product that is active on both broadleaf and grass plants will be governed by the limitation placed on grass

Herbicide modes of action, minimum water volumes with low-drift nozzles, and coarsest spray quality at stated minimum water volume. Note that higher water volumes may allow for coarser sprays.

WSSA (HRAC) Mode of Action Group	Example Active Ingredients	Water Volume (US gpa)	Water Volume (L/ha)	Spray Quality	Wilger Tip Wizard VMD (µm) (wilger.net)
1 (A)	clodinafop, pinoxaden, clethodim, fenoxaprop	7 - 10	70 - 100	Medium – Coarse	220-400
2 (broadleaf) (B)	thifensulfuron, tribenuron, florasulam	6 - 10	60 - 100	Coarse – Very Coarse	270-460
2 (grass) (B)	pyroxsulam, flucarbazone-sodium, thiencarbazone, imazamox	7 - 10	70 - 100	Medium – Coarse	220-400
4 (O)	2,4-D, MCPA, dicamba, clopyralid, fluroxypyr	6 - 10	60 - 100	Coarse – Very Coarse	270-460
5 (C ₁)	atrazine, metribuzin	8 - 10	80 - 100	Medium – Coarse	220-400
6 (C ₃)	bromoxynil	7 - 10	70 - 100	Medium – Coarse	220-400
9 (G)	glyphosate	3 - 5	30 - 50	Coarse – Very Coarse	270-460
10 (H)	glufosinate	10 - 12	100 - 120	Medium – Coarse	220-400
14 (E)	carfentrazone (Aim) pyraflufen-ethyl) saflufenacil (Heat)	8 - 10	80 - 100	Medium – Coarse	220-400
15 (K _s)	acetochlor, metolachlor, pyroxasulfone	10	100	Coarse – Very Coarse	270-460
22 (D)	diquat	10 - 15	100 - 150	Medium – Coarse	220-400
27 (L)	pyrasulfotole (Infinity, Velocity M3)	7 - 10	70 - 100	Medium – Coarse	220-400

targets. A tank mix comprised of both systemic and contact products is governed by the limitations placed on contact products.

A factor we should also consider is soil activity and the presence of residue. Studies have shown that soil-active

products are relatively insensitive to droplet size. But if they have to travel through a layer of trash to get to the soil surface, more application volume is the best tool.

Original article published on February 9, 2023

<https://sprayers101.com/mode-of-action-and-spray-quality/>

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Turning Cows out to Pasture

by Barry Yaremcio, Yaremcio Ag Consulting

Pastures that were grazed intensely last year will take longer to start growing. When the crown of a plant is injured by late season grazing and some of the vegetative buds are consumed, fewer tillers are present to start growing this spring. This reduces the amount of forage produced.

Initial growth in the spring requires the plants to use energy reserves to develop the first two to three leaves. After this stage, photosynthesis produces sufficient carbohydrates for the plant to become self-sufficient and produce enough energy to allow growth. If plants are grazed earlier than the three-leaf stage, plants become weaker and may die.

Delaying initial turn out by one day in the spring increases fall grazing by two to three days. Total forage yield is also impacted by the duration and intensity of grazing. It is recommended to leave 50% of existing growth to stimulate new growth for later grazing events. Using a rotational grazing system that allows a 30 to 40-day rest period allows the plant to produce new leaf material and replenish root food reserves. High intensity or mob grazing where animals graze a small area for one or two days to remove 50% of available forage is effective. This system also allows a long rest period between grazing.

Planning and developing a controlled grazing system is not effective unless the carrying capacity of a pasture is known. Estimating forage yield is part of the equation. Moisture, soil fertility, age, and composition of the stand all impact yield potential. Knowing how much a cow will eat per day is also part of the equation. Consumption depends on forage quality, size of the cow and calf, and availability of creep feed for the calf. The Animal Unit Month (AUM) is based on a 1,000-pound animal that consumes 800 pounds of dry matter (DM) per month. A 1,400-pound cow consumes 1.28 AUMs per month. Matching feed resources with number of animals helps prevent over grazing.

The link to the fact sheet for more information: <https://open.alberta.ca/dataset/7de47496-cb67-40e3-9c35-f95a7b9fc5a8/resource/63ac0d8d-d718-4b1c-a088-104e4c738525/download/420-16-1.pdf>

Planning eliminates some of the risks of running short of pasture this fall.

For additional information, contact Barry at 403-741-6032 or bjyaremcio@gmail.com.



FEED TESTING

LARA offers two (2) free feed tests per year to all active producers in the MD of Bonnyville, Smoky Lake County, County of St. Paul.

- Silage, haylage, greenfeed, hay, grain, pellets, protein supplements.
- Complete forage package including all macro and micro minerals
- Additional feed tests are \$40.00/test
- Nitrates is an additional \$10.00/test
- Toxins or other tests are an additional \$10.00/test

Hay probes are available at the Smoky Lake County Office and the LARA office in Fort Kent.

CONTACT US (780) 826-7260 www.laraonline.ca



WESTERN CANADA CONFERENCE ON SOIL HEALTH & GRAZING

A Path to Resilience: Healthy Soil, Plants, Economics & People

DECEMBER 10-12, 2024

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16615 – 109 Ave NW Edmonton

Early Bird Pricing until October 31, 2024

Individual \$475.00

Farm Unit (2 people) \$900.00

Individual One Day \$250.00

Student \$375.00

Student One Day \$175.00

Banquet Ticket \$65.00

Tickets do not include Banquet Ticket
which **MUST** be purchased separately

Register at <https://www.absoilgrazing.com>



Lakeland Agricultural Research Association

Mission Statement:

*Lakeland Agricultural Research Association (LARA)
conducts innovative unbiased applied research and extension
supporting sustainable agriculture.*

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