Vol. 01 2026

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Practical Agriculture for Living Landscapes

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Practical Agriculture for Living Landscapes

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Publication of this magazine is made possible by:

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Women in Ranching

January 15 2026, the Lakeland Agricultural Research Association welcomed women from across the region to the Women in Ranching Workshop—an inspiring day of learning, connection, and practical skill-building held at the Bonnyville Centennial Centre.

Designed for women who contribute to ranching in all its forms—whether in the pasture, the office, or the home—the workshop created space for participants to deepen their knowledge while strengthening their confidence and community.

The day featured a diverse lineup of speakers and panels that reflected both the technical and human sides of ranching. Topics ranged from rotational grazing and environmental farm planning to animal health and vaccine handling. A standout session on essential self-care reminded attendees that resilience on the land begins with personal well-being.

Participants also explored innovative and ecological approaches to land stewardship through a panel on beavers in the landscape, alongside discussions on direct marketing and farm-to-table opportunities. These conversations highlighted the growing importance of adaptability, creativity, and ecological awareness in modern ranching.

Join us for the 2027 Women in Ranching

One of the most engaging elements of the day was the hands-on calving simulator, where attendees could practice real-life scenarios with guidance from veterinary professionals—an experience that brought both learning and laughter.

Beyond the sessions, the workshop fostered meaningful connections. With a vibrant tradeshow featuring agricultural services, artisan goods, and wellness practitioners, the event offered space for conversation, collaboration, and support among women who often navigate similar challenges.

The Women in Ranching Workshop was more than a day of education—it was a reminder that knowledge grows stronger when shared, and that the future of ranching is being shaped by capable, connected, and confident women.

This event was brought to you by these amazing sponsors:

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Calving Clinic

LARA was pleased to host a set of hands-on calving workshops.
Held on the same evening, the workshops were split into two focused sessions—one tailored to local producers and another for 4-H members. This format allowed each group to learn in a setting that matched their experience level while still building a shared foundation of knowledge across our agricultural community.

We were fortunate to have Dr. Benoit from the Bonnyville Veterinary Clinic lead both sessions. With a practical, down-to-earth approach, Dr. Benoit walked participants through common calving challenges, early warning signs to watch for, and when intervention is necessary. His ability to translate veterinary knowledge into clear, actionable steps made the information accessible and immediately useful.

Before calling the vet, do a quick check - what can you feel?

Participants had the opportunity to explore hands-on techniques and tools used during calving, including positioning, assisted delivery methods, and practical strategies to reduce stress on both cow and calf. The sessions emphasized not only how to respond in difficult situations, but also how to prevent them through preparation, observation, and good management.

The 4-H workshop created a valuable space for young producers to build confidence and ask questions, while the producer session allowed for deeper discussion and knowledge-sharing among peers. Both groups brought great energy, curiosity, and a willingness to learn—resulting in strong attendance and meaningful engagement throughout the evening.

These workshops are a reminder of the value of coming together to share knowledge, build skills, and support one another through the realities of agriculture. As calving season continues across the region, we hope participants left feeling more prepared, more confident, and better equipped for the season.

Thank you to the organizations that made this event possible:

UNIVERSITY OF CALGARY
FACULTY OF VETERINARY MEDICINE
BONNYVILLE VETERINARY CLINIC
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Annual General Meeting

On March 11, 2026 LARA hosted our AGM at Flat Lake Hall. Over 30 producers and community members attended to hear an update on this past year's research projects and events and what's in-store for the upcoming season. The day also featured a producer panel on how to prepare for drought, hosted by LARA's own Kristy Tetreau and featuring Holistic Management Educator and Grazing Mentor Kelly Sidoryk along with Brian Zwack of ZS Farms. We ended the day with a financial update from the accountant, elections to fill 4 open board positions and the new board met to elect executive positions and discuss the upcoming year.

Passive Solar Greenhouse Workshop

This winter at the St. Paul District Arts Foundation, we explored a practical solution to one of our biggest challenges in the Lakeland—our short growing season. Joined by Kim Ross of K-Ross Farms, participants learned how passive solar greenhouses can extend production well beyond the limits of our outdoor climate, creating opportunities to grow earlier in the spring and later into the fall—and even through parts of the winter. More about Passive Solar Greenhouses in the Regenerative Gaedening Section.

Rotational Grazing Planning Session

Taking the time to write out a grazing plan helps bring clarity to your operation, from pasture use to livestock movement, and creates a shared understanding for everyone involved in day-to-day decisions.

While no plan is ever followed exactly, having one in place allows producers to think ahead, respond more effectively to changing conditions, and make more confident management decisions throughout the grazing season. It's a tool that supports both flexibility and intention.

Another key benefit is that a documented grazing plan can open doors to funding opportunities. Many grant programs in our region look for evidence of planned grazing management, making this step not just practical, but strategic.

Producers in our area also have access to support through the Canadian Forage and Grassland Association Grazing Mentor Program. Local mentors include Kelly Sidoryk and Adam Charbonneau, who are available to help producers develop and refine grazing plans that work on the ground.

Lakeland Agronomy Update

The annual Lakeland Agronomy Update took place on March 24, 2026 at the Ashmont Agriplex. Attendees heard from Ruoxi Xia, Neil Blue, Katelyn Miller and members of our very own research team. It was a day focused on planting decisions following the last few dry years, with practical insights that producers can apply this coming season. The sessions also provided current and up-to-date information on marketing strategies for key crops like canola, wheat, soybeans and corn- which was particularly valuable given today's market conditions.

Another key highlight was the introduction of some new products available on the market. These inputs show promising potential to boost yields, even when used to partially replace conventional fertilizers- it will be interesting to see how they perform under conditions here in the Lakeland!

Winter Watering Forum

Keeping water flowing through a Lakeland winter takes more than good intentions—it takes planning, adaptability, and the right systems in place. At our Winter Watering Forum at Goodridge Hall, producers gathered to dig into practical solutions for cold-weather watering.

Sean McGrath, owner and operator of Round Rock Ranching shared firsthand experience from the field, walking through what has worked (and what hasn't) when managing livestock water in real winter conditions. Monty Phillips of Little Demon Co. complemented this with a look at innovative equipment and system design, highlighting ways to build reliability and efficiency into winter watering setups.

The day wrapped up with a field tour to Patrick Elsen's farm, where participants saw a hybrid solar and wind-powered watering system in action. Standing beside a working system grounded the conversation—showing that even in our cold climate, there are viable, resilient options available.

THE NEXT CHAPTER IN WATER MANAGEMENT: WHAT PRODUCERS NEED TO KNOW

BY MARA NEEDHAM *Marketing & Communications Coordinator*
Lakeland Agricultural Research Association

After a year where water was scarce, farmers and producers in the Lakeland, and across Alberta, have more help when it comes to water management. Under the new Water Amendment Act there is a new streamlined process for amending licenses, and consolidating allocation under a single license, without impacting other water users or the environment. The current first-in-time, first-in-right water license priority system, remains unchanged.

The new act also creates a new category of lower risk inter-basin transfers that can be approved through ministerial order instead of a special act of legislation. However, these transfers must meet strict environmental standards and limits and if they don't, they will continue to need a special act of legislation.

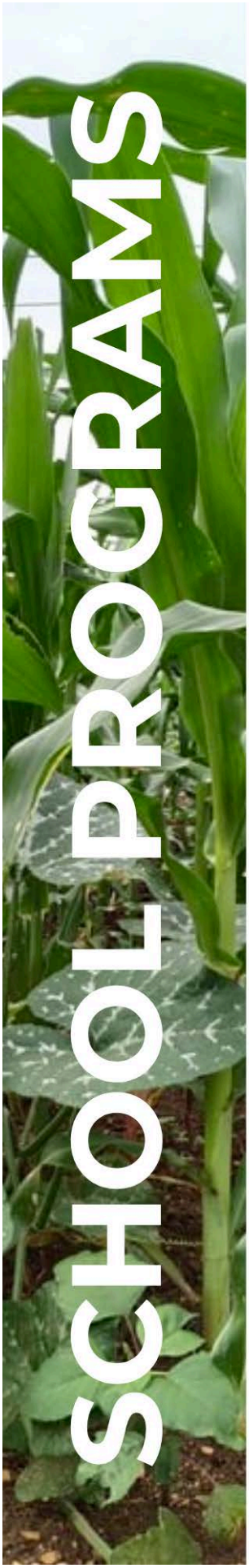
The Water Act hasn't been meaningfully updated since 1999.

Alberta's population has nearly doubled since then, and our water management system needs to keep up.

The amendments also allow and encourage producers to use other water sources- such as collecting rooftop rainwater collection and reusing treated wastewater, to help aid in water conservation.

Going forward, the government will work to develop policies that align with the legislation for water use reporting, management of alternative sources and pricing disclosure for licensed water transfers and other water access.

Source: "Alberta farmers and ranchers aided by Water Amendment Act" by Greg Price, reporter, Glacier FarmMedia



JUNIOR GARDENERS

Growing Curiosity, one class at a time

Bring learning to life this spring

One lucky grade 6 class will be chosen to help us plant our greenhouse and garden at our Fort Kent Research Farm.

- **Plant & grow real gardens**
- **Explore greenhouse growing**
- **Compare no-till & tilled soils**
- **Learn how soil, water and plants work together**

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Alyssa Krawchuk, Executive Director

For over 15 years, Alyssa has been involved in agriculture research, and 13 of those have been with LARA! She is a Professional Agrologist (P.Ag.), registered with the Alberta Institute of Agrologists (AIA) and has a Bachelor of Science (B.Sc.) in Agriculture with a major in Animal Science from the University of Saskatchewan. Her keen interest in livestock production, annual and perennial forage management and animal nutrition led her to her first role with LARA as the Forage and Livestock Specialist.

In 2015 she moved into her role as executive director where she leads our team passionately and thoughtfully- always looking to push our research projects forward and get results out to the people who will use it most- our LARA members. Her commitment to producers, board members and staff is the driving force behind LARA's research, innovation, and education—helping turn ideas into real-world impact. Beyond the office, she's a horse lover, acreage adventurer, and proud mom of two.

Jay Cory, LARA Board Chair

LARA Chair, Jay Cory grew up near Cold Lake, and now resides near Ardmore. He has been working with his dad and 3 kids on their family farm his entire life, minus the years he was at the University of Saskatchewan getting his Bachelor of Science (B.Sc.) in Agriculture. Their operation is primarily cow/calf, with some grain. His dad brought him to many LARA events as a child and after he finished university in 2000, he got tricked into attending a LARA AGM and ended up on the Lakeland Forage Association board- which was the gateway into him joining the LARA board 5 years ago. With LARA he loves going on field tours and talking with like minded people about agriculture. He's only had a "real job" for 6 months of his life: a 4 month stint with PFRA in Regina and a 2 month stint driving a vac truck- it didn't take him long to realize he wanted to be working his own farm, even if times were tough.

ADDRESSING COPPER DEFICIENCY IN LOCAL FORAGES: WHEAT, BARLEY & OATS

BY MOMNA FARZAND *Research Agrologist*
Lakeland Agricultural Research Association

We consistently observe low copper (Cu) levels in forages produced in the Lakeland region of Alberta, suggesting that cattle in this area may be at risk of Cu deficiency. This deficiency can lead to reduced conception rates, weight loss, and suboptimal growth, making it a significant concern for livestock producers. While mineral supplements and injections can help, they may not fully compensate when local forages are inherently low in Cu.

To address this challenge, researchers at the LARA Research Farm conducted a field study during the 2025 growing season to explore whether foliar-applied copper sulfate ($CuSO_4$) could increase Cu content in commonly grown forage crops, including wheat, barley, and oats. The study examined four levels of foliar Cu application, 0, 0.1, 0.3, and 0.5 lb Cu per acre, and assessed their effects on forage Cu concentration, nutritive value, and dry matter yield.

The results were encouraging. In oats, Cu levels increased by up to 174 percent with foliar applications, from 2.93 mg kg^{-1} in the untreated control to 8.04 mg kg^{-1} at the highest application rate.

Wheat saw a 71 percent increase in Cu concentration, and barley experienced nearly a twofold rise, from 3.45 mg kg^{-1} in the control to 6.65 mg kg^{-1} in Cu-treated plots. Importantly, these increases occurred without significant reductions in forage dry matter yield or major negative impacts on other quality parameters such as crude protein, fiber content, or total digestible nutrients.

While foliar Cu applications effectively boosted Cu levels in all three crops, the study noted that the resulting concentrations were still slightly below the dietary requirement for beef cattle, which is approximately 10 mg kg^{-1}. This suggests that additional Cu supplementation, through mineral mixes, remains necessary to fully meet the animals' needs. However, applying Cu foliar sprays at rates between 0.3 and 0.5 lb per acre appears both agronomically safe and effective as a practical tool to enhance the Cu content of local forages.

This research highlights a promising, cost-effective strategy to improve cattle mineral nutrition in the Lakeland region. By increasing Cu levels in wheat, barley, and oats, producers can help safeguard herd health, support reproductive performance, and optimize growth. While further multi-year studies are recommended to confirm these findings, foliar Cu fertilization represents a proactive step toward addressing the persistent Cu deficiency in locally produced forages.

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FIELD SCALE TRIAL AIMS TO INVESTIGATE ESTABLISHMENT PROBLEMS IN REMOTE PASTURE REJUVENATION

BY ALYSSA KRAWCHUK *Executive Director*
Lakeland Agricultural Research Association

The Lakeland region of Alberta has been experiencing some of the driest conditions since 2002, leaving many agricultural producers scrambling for feed and water resources for livestock. As a result, many pastures tend to be overgrazed in the fall as producers search for ways of extending available feed sources. Overgrazed pastures tend to producer less the following year and require additional management strategies that include reduced grazing days to ensure long-term recovery.

According to the Beef Cattle Research Council (BCRC), over-seeding legumes into an established prepared pasture, can be a relatively inexpensive way of improving overall forage stand and quality. This could be a method to increase available feed and nutrition for livestock. However, attention needs to be paid to best management practices (BMPs) to ensure success. This includes preparing the pasture for over-seeding and maximizing seed to soil contact.

Pastures in remote locations are often difficult to reach with typical mechanical equipment, such as a seeder, meaning these pastures are often not rejuvenated at the same rate as easily accessible locations. As a result, forage stand and quality typically will decrease over time, particularly legume species, meaning less nutrition is available to cattle long-term and grazing days may be lost.

With the advent of drones for seeding perennial forages, producers have a new tool at their disposal to make rejuvenation of remote pastures more accessible. This has increased the number of producers broadcast seeding perennial forages in areas they could not access with ground driven equipment and the use of drones has significantly increased over the past two years in the region. However, anecdotal reports from the region suggest that establishment of perennial forages via broadcast seeding with a drone can be challenging.

"I personally believe that using the cattle to incorporate makes the most sense economically and practically" – Nick Kunec, Kunec Cattle Company

In many cases, incorporation methods are not utilized and thus seed to soil contact is not maximized. In these cases, forage establishment tends to be very minimal and producers see little to no improvement in stand quality or quantity.

One of the simplest methods of adding an incorporation method to remote pastures is through animal impact where cattle are utilized, through hoof action, to drive seed into the soil. In many cases, this can be just as effective as harrowing after seeding.

In partnership with Farmers for Climate Solutions' Farm Resiliency Mentorship Program, this project will illustrate the effectiveness of utilizing animal impact or hoof action to improve seed to soil contact when over-seeding legumes into an existing pasture in a rotational grazing system via drone. Working with two local producers in the MD of Bonnyville, we will be comparing hoof traffic as an establishment method against more common methods, including harrowing and no incorporation.

This project will provide significant benefit to producers in the region through accurate, regional information on forage establishment and an economic analysis of the different incorporation methods.

This trial, along with a number of other field scale trials LARA will be managing this year, will be featured in an upcoming field tour this fall.

PROUDLY SUPPORTED BY:

FaRM Resilience Mentorship
A Farmers for Climate Solutions Program

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BLACK KNOT: IDENTIFYING, MANAGING, AND PREVENTING A PERSISTENT PRAIRIE PROBLEM

BY KRISTY TETREAU *Environment & Education Coordinator*
Lakeland Agricultural Research Association

What is Black Knot?

Black knot is one of those deceptively quiet plant diseases that can take hold in a shelterbelt or backyard tree before you even notice it's there. Caused by the fungus *Apiosporina morbosa*, black knot is common across the Prairies and boreal regions. While it rarely kills a tree overnight, its slow spread and ability to drastically reduce tree health make it important to catch early—and manage properly.

Black knot forms hard, swollen, charcoal-black galls along branches, twigs, and sometimes the main stem of affected trees. These knots start as a suttle swellings in the first year of infection, eventually turning black and brittle in their second or third year. By the time most people notice them, the fungus has already been active for multiple growing seasons.
Black knot is especially common on:

- Chokecherry
- Mayday
- Canada plum
- Pin cherry
- Nanking cherry

Black knot on a Schubert Chokecherry (Prunus virginiana 'Schubert')

Natural stands of chokecherry often serve as reservoirs for the spores, and in many rural properties—especially those with mature shelterbelts—wind-borne spores easily infect new trees each spring or early summer.

How Black Knot Spreads

Every spring, during wet weather, the mature black knots release spores that stick to newly emerging green shoots. If the branch remains moist long enough, the spores germinate and begin to invade the woody tissue. Because the infection grows internally long before the visible gall appears, identifying it early requires regular tree inspections.

Left unmanaged, black knot:

- Reduces air movement and sunlight within shelterbelts
- Restricts nutrient and water flow to the canopy
- Weakens branches, making them prone to breakage
- Can significantly reduce fruit yield on edible species
- Can eventually kill the tree

What To Do If You Find Black Knot

Finding black knot in a windrow, tree line, or shelterbelt is not uncommon. What matters is how quickly and effectively you respond.

1. Prune During Dormancy
The best time to remove black knot is late winter, before spring thaw—typically February or March in our region. At this point, the fungus is dormant, and there is less risk of spreading spores.

2. Cut Well Below the Infection
Remove infected branches by cutting at least 6–12 inches (15–30 cm) below the visible gall. The fungus travels internally beyond what you can see, so shallow cuts risk leaving active spores behind.
If the gall is on the trunk or a major limb that cannot be removed, you can attempt to chisel out the infected area down to healthy wood—but this is a temporary measure and often not as effective.

3. Dispose of Pruned Material Properly
Wood containing black knot should never be left in a compost windrow, brush pile, or anywhere on your property where it can continue to sporulate.
Instead:

- Burn it (where permitted), or
- Seal it in bags and landfill it, or
- Chip it and bury it deeply so it cannot release spores

In commercial composting systems that reach high internal temperatures, the fungus may be killed—but for most on-farm or backyard windrows, conditions are not hot enough to guarantee destruction. Leaving infected branches in a windrow will allow the fungus to continue producing spores each spring, re-infecting your trees.

4. Monitor Regularly
Check your trees at least once per year—late winter is ideal because the knots are highly visible against bare branches.

5. Consider Tree Replacement
Some cherry and plum varieties are more resistant to black knot. If a shelterbelt is repeatedly infected, replacing highly susceptible species with resistant ones—such as hardy crabapple, pincherry alternatives, or non-prunus species—can help break the disease cycle.

Preventing Re-Infestation

- Maintain airflow in shelterbelts by proper spacing and periodic thinning.
- Remove wild chokecherry thickets within 100 metres of managed tree rows where feasible.
- Sanitize pruning tools with a bleach solution between cuts to avoid spreading spores.
- Encourage tree vigor through mulching, watering during drought, and stress reduction.

Healthy trees are better able to compartmentalize infection and withstand the stress of partial branch removal.

Local Resources

For those looking for local expertise, Joan Engler from E Tree Farm in Cold Lake, AB is an excellent resource for all things trees.

Joan has been a valued speaker at our Gardening Forums, generously sharing practical, region-specific knowledge.

When it comes to managing Black Knot, Joan recommends pruning during the dormant season - anytime between Thanksgiving and Easter - to help reduce the risk of disease. And don't forget to sterlilize your tools!

E Tree

DUGOUT PROJECT

BY KRISTY TETREAU *Environment & Education Coordinator*
Lakeland Agricultural Research Association

Seasonal Shifts: Understanding Water Quality in Livestock Systems

In Northeast Alberta, water has always been a cornerstone of livestock production—but in recent years, it has become an increasingly vulnerable resource. With some of the driest conditions seen since 2002, producers across the region are navigating reduced water availability alongside declining water quality in dugouts and other surface sources.

While feed testing is a routine part of most livestock operations, water—arguably the most critical nutrient—is often overlooked.

This demonstration project, Seasonal Surface Water Quality Response to Livestock Exclusion, aims to change that.

Why Water Testing Matters

As dugout levels drop due to evaporation and limited rainfall, the concentration of minerals, nutrients, and contaminants increases. According to the Beef Cattle Research Council, this can lead to reduced weight gain, reproductive challenges, increased disease risk, and in severe cases, livestock loss.

Despite these risks, regular water testing is not yet common practice.

Water quality can shift rapidly—especially during hot, dry grazing seasons. Without monitoring, producers may miss critical changes that directly impact herd health and performance.

A Practical Demonstration

This project is designed to show just how quickly water quality can change—and how management decisions can influence those outcomes.

Across the grazing season, three types of dugout systems are being monitored:

- Direct access dugouts, where livestock enter the water freely
- Fenced dugouts with troughs nearby, limiting direct contact
- Fenced dugouts with troughs located away from the water source, fully separating livestock from the dugout

Each system offers a real-world look at how different approaches affect water quality over time.

BE A PART OF THE RESEARCH

Management That Makes a Difference

One of the most effective ways to protect water quality is also one of the simplest: keep livestock out of the water source.

When cattle enter dugouts, they introduce manure, disturb sediments, and degrade banks—leading to increased nutrients, bacteria, and total suspended solids in the water. By contrast, offsite watering systems help maintain cleaner water, reduce contamination, and improve overall herd performance.

Research and on-farm experience consistently show that cattle provided with clean, accessible water:

- Drink more
- Eat more
- Gain more

The result is improved productivity—and ultimately, stronger profitability.

Building Awareness Through Data

From May through October, this project will collect:

- Weekly field observations
- Monthly laboratory water testing

Together, this data will provide a clear picture of how water quality evolves through the grazing season—and how quickly improvements can be seen when best management practices are applied.

The goal is not just to generate data, but to give producers practical, locally relevant insight they can apply on their own operations.

LARA is looking for Volunteers for the Following Site Types:

1. Open access dugout (livestock have direct access)
2. Fenced dugout with trough nearby
3. Fenced dugout with trough located away from the water source

Each site will be:

- Sampled monthly for lab analysis
- Assessed through weekly field screening
- Monitored from May through October

Producers interested in volunteering a site for this demonstration are invited to contact us Kristy@laraonline.ca.

Demonstration sites will be selected to represent one of the three site types listed above. Consideration will be given to site accessability, safety, and willingness to participate thoughout the full grazing season.

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WHAT YOU CAN CONTROL: STAYING GROUNDED THROUGH THE SEASON

BY MARA NEEDHAM *Marketing & Communications Coordinator*
Lakeland Agricultural Research Association

As we gear up for another busy season of planting and growing and harvesting, it's normal to start to worry about things like weather conditions, market fluctuations and the looming workload. But learning to manage these anxieties will not only increase your overall well being, but will also add to the success of the farming season. The Do More Agriculture Foundation some key strategies to help you cope with the anxiety of a new farming season:

- **Embrace Flexibility in Planning:** While planning is essential, it's equally important to remain adaptable. Acknowledge that changes may be necessary as the season progresses, and be open to adjusting your plans based on the circumstances. This flexibility can help reduce anxiety by allowing you to respond effectively to unexpected challenges.

Understand Your Locus of Control

Recognize what aspects of farming are within your control and what are not. Focus your energy and efforts on the things you can influence, such as your farming practices and self-care, and try to let go of the anxiety surrounding factors beyond your control, like the weather or market prices.

- **Acknowledge the Flow of Emotions:** Anxiety is a natural emotion, especially in a profession as dynamic as farming. Accept that it's normal to feel anxious during times of uncertainty and that emotions will ebb and flow throughout the season.

- **Seek Support:** You don't have to navigate these challenges alone. Reach out to fellow farmers, agricultural advisors, or mental health professionals for support. Sharing experiences and seeking advice can provide comfort and practical solutions. Additionally, platforms like AgTalk offer a safe space for peer-to-peer support, and the DoMore Find Support page can connect you with resources tailored to the agricultural community.

- **Practice Mindfulness and Stress-Reduction Techniques:** Incorporate mindfulness practices such as deep breathing, meditation, or walk into your routine. These techniques can help ground you in the present moment and reduce feelings of anxiety.

- **Set Realistic Expectations:** It's important to set achievable goals and be kind to yourself if things don't go as planned. Celebrate small victories and be patient with yourself and the process.

- **Prioritize Self-Care:** Caring for your physical and mental well-being is crucial, even during busy seasons. Look for small ways to incorporate self-maintenance into your day. Take a five-minute walk around the field, or use the time while the tractor is warming up to enjoy a moment of quiet reflection instead of scrolling through social media. Engaging in activities that bring you joy and relaxation, whether spending time with loved ones, enjoying nature, or practicing hobbies, can help manage anxiety levels. Regular exercise, a balanced diet, and adequate sleep are also key components of self-care.

- **Stay Informed but Not Overwhelmed:** While staying informed about weather forecasts and market trends is important, be mindful of not overloading yourself with information that might increase anxiety. Find a balance that works for you.

Remember, managing anxiety is a process, and it's okay to seek help when needed. By adopting these strategies, you can cultivate a sense of resilience and navigate the new farming season with a more balanced and proactive approach to your mental well-being.

Source : "Navigating the New Season: Managing Anxiety in Farming", DoMore Agriculture Foundation

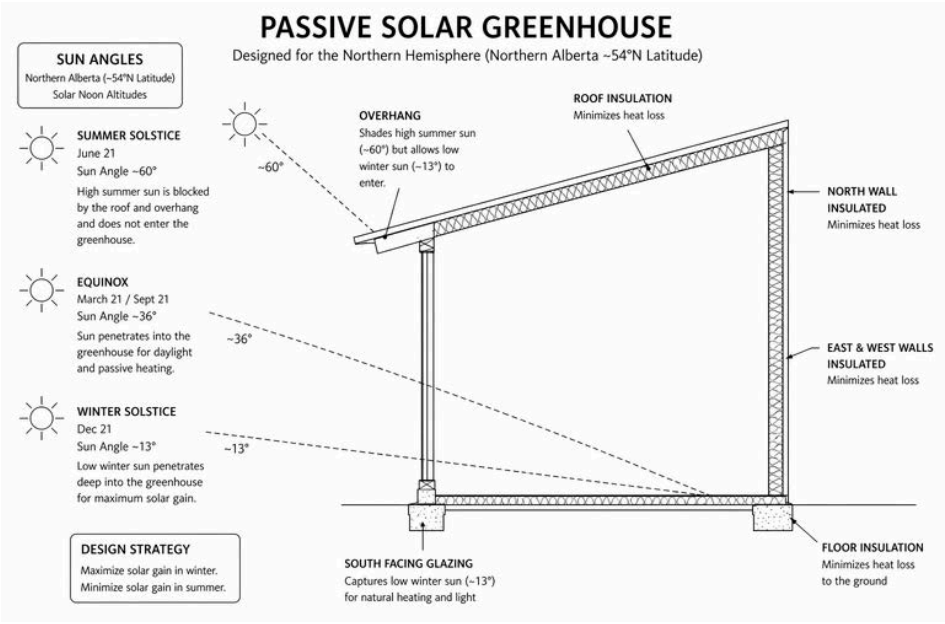
Passive Solar Greenhouses in Northern Climates

BY KRISTY TETREAU *Environment & Education Coordinator*
Lakeland Agricultural Research Association

For gardeners and producers in northern climates, the growing season can feel frustratingly short. When winter stretches from October to April, the idea of harvesting fresh greens year-round may seem unrealistic. Yet across Canada, an increasing number of growers are extending their seasons—sometimes even growing through winter—using passive solar greenhouses. Also known as four-season greenhouses, these structures rely less on external energy and more on thoughtful design. By carefully positioning the building, insulating key surfaces, and capturing the sun's heat during the day, passive solar greenhouses create stable growing environments even in cold climates.

To achieve maximum solar gain during winter most passive solar greenhouses share a similar layout:

- Glazing primarily on the south-facing wall
- Insulated north, east and west walls
- Insulated roofing systems
- Orientation aligned with the winter path of the sun



Designing for the Winter Sun

The core principle of a passive solar greenhouse is simple: maximize solar gain during winter while minimizing heat loss. In northern regions like Alberta, winter sunlight arrives at a low angle in the southern sky. A south-facing glazed wall allows sunlight to penetrate deeply into the greenhouse, warming interior surfaces throughout the day.

The insulated walls and roof act like a thermal blanket, reducing the amount of heat that escapes once the sun goes down.

During summer, when the sun sits much higher overhead, roof overhangs, shade cloth, and proper ventilation help limit excessive solar gain and prevent overheating.

Thermal Mass

Capturing sunlight is only part of the equation. In cold climates, the real challenge is maintaining warmth overnight when temperatures can plunge. This is where thermal mass comes in. Thermal mass materials absorb heat during the day and slowly release it back into the greenhouse at night. Common approaches include:

- Gravel or rock beds
- Concrete floors or walls
- Black barrels filled with water
- Large water tanks
- Soil-based heat storage systems

Storing Heat in the Ground

Some passive solar greenhouses take thermal storage even further by incorporating underground heat storage systems, often called climate batteries or ground-to-air heat transfer (GAHT) systems. These systems circulate warm air through perforated pipes buried beneath the greenhouse floor.

During sunny days, excess heat is pushed underground into the surrounding soil or gravel. Later—sometimes hours or even days later—that stored heat slowly radiates back into the greenhouse. The result is a more stable growing environment with fewer dramatic temperature fluctuations. Rob and Michelle Avis of Verge Permaculture from central Alberta Have a number of resources on thermal batteries including: YouTube videos, a website and a book "Building Your Permaculture Property".

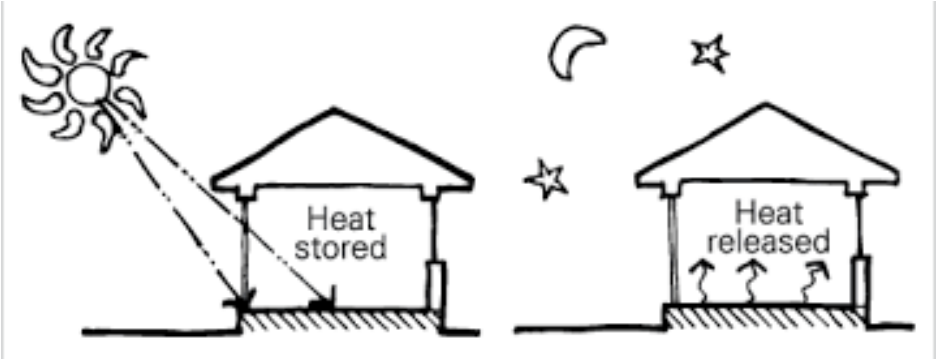
Kross Farms Passive Solar Greenhouse in Manville, AB.

Here in the Lakeland

Thermal mass can certainly help moderate temperature swings, but here in the Lakeland thermal mass alone isn't enough to carry a true four season greenhouse. From November to February, our short days and extreme cold offer minimal solar recharge. Add in a stretch of cloud cover and the temperatures inside a PSGH is sure to drop beyond ideal growing range.

Many growers incorporate woods stoves which can be an excellent way to build resilience and reduce fuel costs.

However, they require consistent attention and as anyone who has a wood stove in their home knows, the temperatures they produce can get quite hot, and plants like a consistent temperature with cool season crops having optimal growth between 12-18C and warm season crops preferring 21-26C. For that reason, having a secondary heat source on a thermostat is a must according to Kim Ross of Kross Farms in Manville AB. Kim is a notill gardener from Manville, AB who grows commercially, year-round. She has resources on her facebook page, website and runs several inperson classes throughout the year.



Crop Selection & Seasonal Strategies

In a PSGH, understanding the difference between warm and cool season crops is key to working with the system rather than against it. Cool season crops like spinach, kale, lettuce and asian greens are well suited to shoulder seasons and even winter production (additional light sources may be needed).

Warm season crops, such as tomatoes, cucumbers, and peppers require consistent heat and long days to thrive.

A well managed PSGH shifts with the seasons: focusing on warm-season production during peak sunlight, then transitioning to cool-season crops that can carry you through darker months with fewer inputs.

Air Movement & Heat Distribution

Warm air rises - so without movment heat will get trapped at the top of a PSGH. By using small fans you will even out the tempurture withing the greenhouse and the air movement will incourage stronger plants by mimicing wind in natural growing conditions.

Core principle of a passive solar greenhouse:

- Solar orientation and light capture
- Thermal mass
- Insulation & heat retention
- Air movement & heat distribution
- Soil as a living heat battery
- Supplemental heat
- Crop selection & seasonal stratigy

Long hours in the tractor have a way of giving you space to think—but they're also the perfect time to take something in. Plugging into a good podcast or audiobook can turn those steady passes across the field into an opportunity to learn, reflect, or hear how others are approaching similar challenges. Whether it's a conversation between producers, a deep dive into soil health, or a story that shifts your perspective, these listens offer a convenient way to learn from others in the industry, gain new perspectives, and explore innovative ideas.

COVERS & CO.

Farm Panel Podcast: [S5E9]: Ray Archuleta - Soil Scientist & Soil Health Educator

In this episode, Ray Archuleta discusses the role of soil biology in crop production and long-term farm performance. Drawing on field experience, he focuses on how management practices influence soil structure, water movement, and nutrient cycling. Overall, it's a straightforward discussion that links soil health concepts to management decisions producers can evaluate within their own systems.

KUNEC CATTLE COMPANY - LA COREY, AB

BY KRISTY TETREAU *Environment & Education Coordinator*
Lakeland Agricultural Research Association

On August 21, 2025, LARA hosted a field tour at Nick Kunec's Farm, where producers gathered to see firsthand how he is using the Gallagher eShepherd Virtual Fencing system to manage grazing with greater flexibility and precision. The tour offered a practical, on-the-ground look at how emerging technology can support adaptive grazing, improve land stewardship, and reduce reliance on traditional infrastructure. Nick, who also serves as a LARA board member, shared openly about both the opportunities and learning curves that come with adopting new tools.

Building on that in-person experience, LARA later welcomed Kimberly Cornish, Executive Director of the Food Water Wellness Foundation and a leader within the Regenerative Alberta Living Lab (RALL), on March 26, 2026. Inspired by a producer's idea to make learning more accessible without the need for extensive travel, Kimberly and her team have developed a series of virtual farm tours that showcase regenerative practices across the province. Set for public release in December 2026, these tours extend the reach of field-based learning—connecting producers to real-world innovation, including operations like Nick's, from wherever they are.

Nick didn't grow up on a farm, but spending time at his uncle's farm operation planted a seed. In 2015, an opportunity with his uncle turned into a fulltime ranching career.

His ranch sits about five miles northeast of La Corey. It's a landscape that looks like it should hold water—trees, grass, and natural shelter—but years of dry conditions have shaped his management approach. "We need to be able to produce grass every year—even in dry years. And the way to do that is to leave more residue." Says Nick.

Photo credit: Screenshot from Regenerative Alberta Living Lab Virtual Farm Tour featuring Kunec Cattle Company. Courtesy of RALL/LARA (2026)

Learning the Land, Then Letting It Rest

Nick describes the early years as a steep learning curve. A turning point came in 2019 after hearing Gabe Brown speak at a LARA event. In 2020, he seeded diverse cover crop blends—peas, oats, turnips, radishes, clovers—into his fields. The following year, he took it further and went to organic farming. His long-term goal? To push plant succession forward—faster than nature would on its own. With support from agronomist Steve Kenyon, he added frost-seeded legumes in 2023 to build diversity and soil function.

"Push plant succession forward—faster than nature would on its own." - Kunec

Bale Grazing as Soil Building

One of the most visible transformations on the ranch comes from bale grazing. On an eight-acre field that once produced poorly as hay, Nick placed roughly 120 bales—about 15 bales per acre. The result is hard to miss, especially with the dry conditions the farm has had "Cow manure plus residue equals green. No manure equals death." Says Nick. Even after 30 days without measurable moisture, digging beneath the residue reveals retained soil moisture—something absent in untreated areas.

Rather than seeing bale grazing as a feeding strategy, Nick sees it as an investment in soil:

- Nutrient import (especially when buying hay)
- Organic matter accumulation
- Moisture retention
- Improved forage response in following years

Straw, he notes, can take a couple of years to fully break down—but the payoff is worth it. "The flush of grass after that—it's awesome."

Stacking Practices: Diversity, Density, and Time

Nick's system isn't built on a single practice—it's the layering that makes it work:

- Diverse cover crops
- Bale grazing
- Stockpiling forage
- High-density grazing
- Long rest periods

"We've been dry for years. The only way forward is intense grazing and long recovery."

He challenges the traditional "take half, leave half" approach. "A cow doesn't take half and leave half. They pick what they like. So you've got to push more non-selective grazing—more like take 75—so everything gets a fair chance to recover." For Nick, overgrazing isn't about how much is eaten—it's about how long plants are exposed to pressure. "Overgrazing is a function of time."

Photo credit: Screenshot from Regenerative Alberta Living Lab Virtual Farm Tour featuring Kunec Cattle Company. Courtesy of RALL(2026)

Grazing as a Tool for Landscape Change

With roughly 300 head in a mob, Nick is using cattle to reshape how his land functions.

"You look out there—half the cows are grazing into the trees. That means more manure, more grass, more diversity in places that used to be underused."
By increasing grazing density and reducing selectivity, he's:

- Suppressing dominant or invasive species
- Encouraging more even plant recovery
- Expanding productive grazing into underutilized areas

"Everything green becomes competition—and every plant gets a chance."

Virtual Fencing: Precision Without the Labour

To take his grazing management further, Nick adopted the Gallagher eShepherd system—GPS-enabled collars that allow him to manage cattle movement digitally. "I can literally draw a fence on my phone, hit enable, and that's where the cows graze." The system uses an audible cue followed by a correction if cattle continue forward. Over time, animals learn the boundaries—and even begin to work with them. "You'll see cows right on the edge. They hear the beep, step back, then when the fence moves—they're the first to find the fresh grass."

The benefit isn't just convenience—it's consistency.

- Multiple fence moves per day
- Increased grazing density
- Better control over rest and recovery

"It lets the cows work for you instead of you working for them."

Watch our social media for the upcoming Regenerative Alberta Living Lab Virtual Farm Tours series, led by Kimberly Cornish

"I can literally draw a fence on my phone, hit enable, and that's where the cows graze." Kunec

Photo credit: Screenshot from Regenerative Alberta Living Lab Virtual Farm Tour featuring Kunec Cattle Company. Courtesy of RALL/LARA (2026)

Part of a Bigger Picture

Nick's work doesn't exist in isolation—it's part of a broader network of producers testing what regenerative agriculture looks like in Alberta conditions.

As a participant in the Regenerative Alberta Living Lab, he is contributing to a growing body of on-the-ground innovation. In March 2026, LARA hosted Kimberly Cornish for a virtual farm tour series featuring producers from across the province—including Nick.

These tours highlight a wide diversity of approaches, from grazing management and livestock integration to soil-building strategies tailored to local conditions. The series is expected to be released publicly later this year, offering producers a chance to learn directly from peers applying these practices in real time.

Looking Ahead

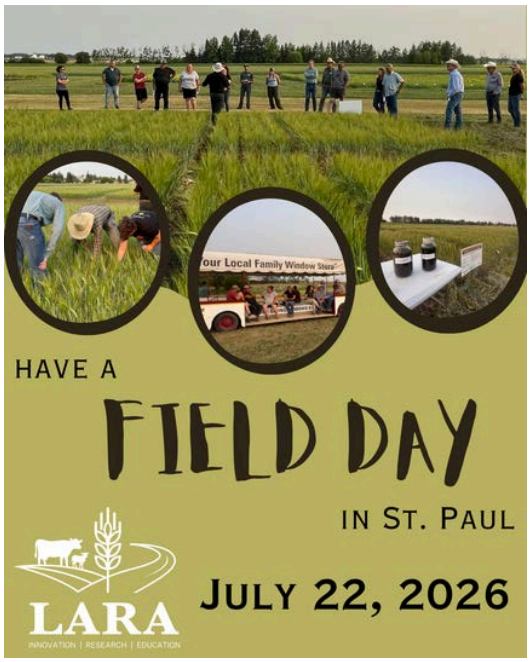
Nick sees regenerative agriculture not as a trend, but as a necessary shift.

"You can feel the difference. When you walk into a field with diversity—it just feels alive."
His focus remains clear:

- Build soil carbon
- Increase water retention
- Improve forage resilience
- Reduce reliance on external inputs

"I'd rather stockpile everything and graze it than make bales. The goal is to keep cows on the land."

For more on the Regenerative Alberta Living Lab https://www.regenlivinglab.org/



St. Paul Field Day

Join us for our upcoming St. Paul Field Day, where we open up our research plots to local producers for a firsthand look at the work happening in our region. This is a chance to see trials in real field conditions and explore how different practices are performing.

Researchers will be onsite walking participants through the trials they are leading, sharing insights, answering questions, and discussing what the results could mean for your opperation.

Register at laraonline.ca

Ranching for Profit

Spend 2 days in the classroom and in the field, with Jordan Steele, learning how to boost productivity, reduce workload, and build a more resilient operation.

Early bird tickets on sale till June 30th.
$100 LARA members, $150 for non members.

Register at laraonline.ca

Open Farm Days

Join us for guided research trial tours, learn how riparian areas and shelterbelts support healthy land and livestock, and watch equipment demonstrations showcasing practical tools for producers.

Bring the whole family and enjoy hands-on experiences like the corn maze, plus connect with local vendors and ag experts at our open market & tradeshow.

LARA

LAKELAND AGRICULTURAL RESEARCH ASSOCIATION

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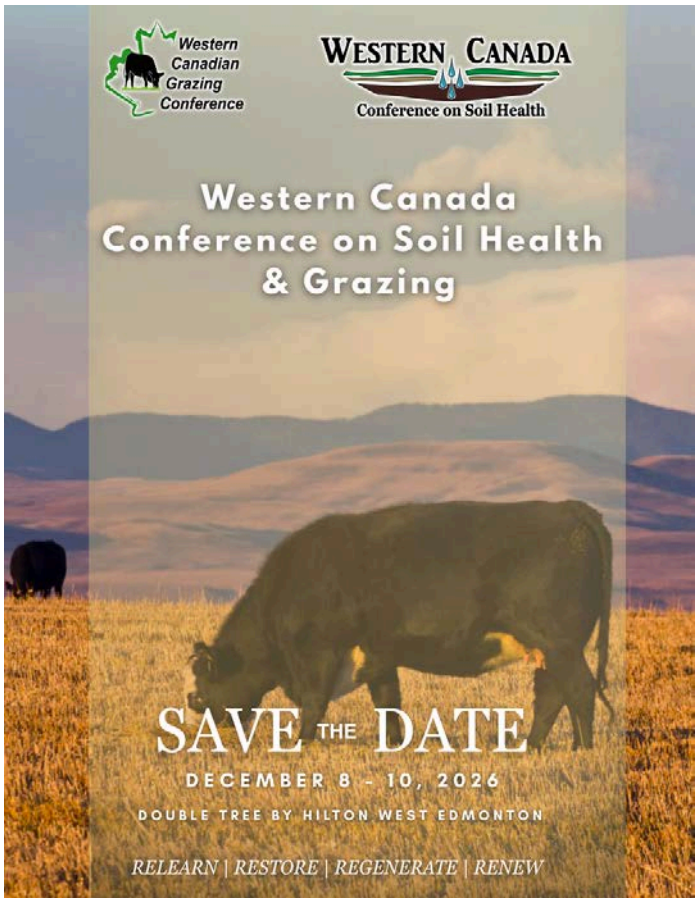

LARA has been serving the Lakeland since 1991.

Our vision is to be a leader in applied agricultural research and extension in Alberta,

Our mission is to conduct local, innovative, unbiased applied agricultural research and extension throughout the Lakeland to promote sustainable agriculture practices for producers, stakeholders, and our rural communities.

LARA

INNOVATION | RESEARCH | EDUCATION

Stay Rooted.

Good ideas don't grow in isolation. Stay connected with LARA for field updates, upcoming events, and practical insight from accross the Lakeland.

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