2023, Issue 1

Grow With Us

Lakeland Agricultural Research Association

Winter 2023

Choosing a Wintering Site for Success

We may be well into winter, but now is a good time to see how your wintering site is working out. Moving into spring, it is wise to check to see where your water is flowing to and from, how your bedding and feeding systems are affecting the landscape and what you could change for next year. Wintering sites are regulated by the Agricultural Operation Practices Act (AOPA) to be managed to protect surface water. Under AOPA all wintering sites must be at least 30 meters away from a water body.

Wintering sites should be economical, utilizing landscape features such as south facing slopes (for sunlight exposure) and bush to reduce wind. However management of these sites is needed to protect both ground and surface water. As the manure accumulates over the frozen landscape in the bedding, feeding and watering locations the risk of runoff needs to be assessed. Flat ground has the least likelihood of runoff and steep slopes (over 15%) the greatest, however the risk of runoff can also be influenced by a variety of factors. These include the amount of precipitation received over the winter period, the soil type (larger aggregate such as sand is a larger risk for groundwater, and clay creates a greater risk of surface water contamination), the vegetative cover, the chance of flooding in the area, and amount of surface water entering the area and bush (trees shelter more of the area, slowing the snow melt).
Groundwater contamination is possible as nutrients accumulate and seepage occurs, especially in sensitive areas such as wetlands and sloughs. Seepage can also occur through buffer areas that do not have sufficient vegetation to absorb and filter nutrients.

Well sites are another source for groundwater contamination. Improper casing seals, flooded well pits, or improperly abandoned wells create a direct pathway for contaminants to enter your aquifer. Avoiding areas with high water tables is also helpful to prevent groundwater contamination.

Nutrients from manure entering your surface and groundwater are not the only contaminants of concern; disease causing bacteria can create an even larger problem. Fecal coliform bacteria such as *Escherichia coli* (*E-coli*) and microorganisms *Cryptosporidium* and *Giardia,* when consumed in the water, can cause serious health issues in both humans and livestock. These bacteria and parasites can cause gastrointestinal illness, fever, vomiting and diarrhea, and kidney failure. It can be fatal to the elderly, infants or people with compromised immune systems. In livestock *E-coli, Cryptosporidium* and *Giardia* can cause animal weight loss, chronic infections and significant losses of calves.

To prevent nutrient accumulation, reducing your livestock densities can be managed with a few simple strategies. By moving your feed sites using portable feed bunks or rolling out your hay in varying locations will spread out your manure distribution.

Continued On Page 4

In This Issue:

LARA 2023 FEED TESTING PRICE LIST

PRICES PER SAMPLE

Basic NIRS (FN1)	$30
Basic NIRS with Minerals (FN1WM)	$35
Full NIRS with Minerals (FN2WM)	$40
Add Nitrates to above tests	+$10
Nitrates Only	$25
Grains and Mixed Feeds (FD3R)	$50
Complete Equine with Sugars (F2H)	$50

LARA WILL NO LONGER BE PROVIDING 2 FREE FEED SAMPLES PER PRODUCER

IF TEST IS NOT SPECIFIED BASIC NIRS WILL BE USED.
SAMPLES WILL NOT BE SENT IF THERE IS NO PHONE NUMBER OR EMAIL ADDRESS WITH THE SAMPLES.

Samples will be sent on the 1st and 3rd Monday of every month.
Results will be available 10-15 business days after samples are sent.
Cash, Cheque, or E-Transfer Accepted.

LARA
LAKELAND AGRICULTURAL RESEARCH ASSOCIATION

Questions please call (780) 826-7260

On-Farm Climate Action Fund - OFCAF

The Agricultural Climate Solutions On-Farm Climate Action Fund (OFCAF) is an initiative to help farmers tackle climate change. The program will provide financial support to producers to accelerate their adoption and implementation of on-farm Beneficial Management Practices (BMPs) to lower Greenhouse Gas (GHG) emissions, support production efficiency, sustainability and resiliency on their farm operations. To assist producers with their adoption of new BMPs, the program will offer producers resources to support BMP implementation and provide BMP design recommendations.

The objective of OFCAF is to support Producers in adopting Beneficial Management Practices (BMPs) that store carbon and reduce greenhouse gases, specifically in the areas of:

1. Nitrogen Management
2. Cover Cropping
3. Rotational Grazing

These practices also provide other environmental benefits such as improved biodiversity and soil health.

MAXIMUM AMOUNTS FOR ELIGIBLE EXPENSES

- Applicants are eligible for multiple projects to a combined maximum grant payment of $75,000
- Applicants are eligible for a maximum 85% reimbursement of eligible cash expenditures across the three BMP target areas
- Applicants must pay for 100% of the upfront costs with no payment for in kind

NITROGEN MANAGEMENT Eligible expenses

- BMP action plan development, or specialized agronomic support provided by a PAg or CCA
- Costs of soil testing, soil mapping, and tissue testing
- Higher cost of the portion of nitrogen fertilizer switched from the fall to the spring application window
- Cost of fertilizer application equipment (rental or custom) to allow for banding, side dressing and injection
- Price difference between standard nitrogen fertilizer and nitrogen fertilizer with nitrification inhibitor
- Custom application costs of synthetic nitrogen fertilizer replacements (manure, compost, or digestate amendments) on cultivated land where it has not been applied in the past 10 years
- If transitioning to manure, rental or custom costs associated with spreading, using hoses or equipment for shallow incorporation (to avoid volatilisation)
- Seed and planting costs (custom or equipment rental) to increase perennial legume crops in rotation

COVER CROPPING Eligible expenses

- Costs related to BMP Action Plan development, or specialized services provided by a PAg or CCA
- Seed costs for regionally- and commodity-appropriate seed as recommended by a Professional Agrologist or Certified Crop Advisor
- Planting costs (custom rates or equipment rental)
- Cover crops underseeded with the main crop or seeded following harvest with sufficient time for adequate growth prior to winter
- Full season cover crops (annual, biennial or perennial in a rotation, e.g. non-marketable crops that do not take land permanently out of production), or underseeded within a main crop
- An expansion of a BMP to a different field where it has not been used before is eligible

ROTATIONAL GRAZING Eligible expenses

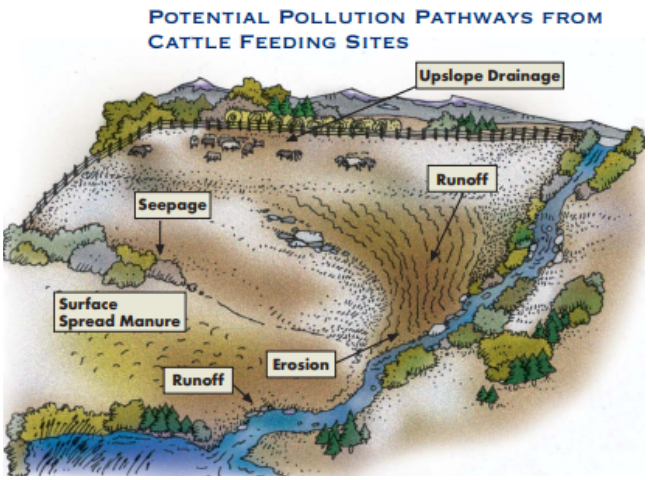
- BMP Action Plan, grazing management plans, technical assessments or engineered designs
- Rotational grazing materials and installation (e.g. cross fencing, wildlife friendly fencing, temporary fencing, energizers, shallow water pipelines less than 15” (38 cm) and waterers, including remote watering systems when powered by renewable energy)
- Improved pasture composition (seeding, custom planting or equipment rental costs for alfalfa, sainfoin, etc.)
- Forage testing (fall or winter)
- An expansion of a BMP to a different field where it has not been used before is eligible

For more information on this program go to: https://rdar.ca/ofcaf/

Other OFCAF programs can be found at:

- Canadian Forage and Grasslands Association https://www.canadianfga.ca/en/projects-projets/farm-climate-action-fund/
- Canola 4 R Advantage https://www.canolacouncil.org/4r-advantage/

You can also use portable windbreaks to spread your cattle out. Harrowing or tilling your feeding and bedding areas also distributes your manure, and will improve forage growth and palatability. Spreading out your feed, bedding and watering sites will also help distribute the manure.

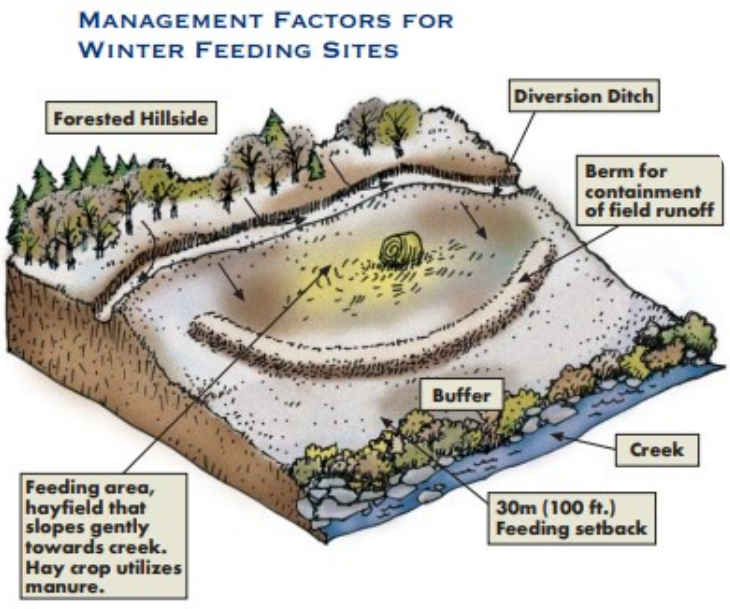


Riparian areas are really attractive to cattle as they provide shelter, food and water. However these sensitive areas are easily subject to degradation and surface water quality will quickly diminish. If the riparian area is a groundwater recharge source, your groundwater may also be contaminated. If your winter site includes a riparian area it needs to be managed and livestock should be encouraged to find shelter and bedding elsewhere. This can be done by providing windbreak shelters such as 20% porosity fencing, shelterbelts, open front sheds or moving your feed site or swath grazing. Growing Forward Grazing and Winter Feeding Programs have funding available for projects such as portable windbreaks, shelterbelts and watering systems.

Diverting clean runoff from your wintering site can be accomplished using ditches or dykes. This can also reduce the amount of mud in your feeding and bedding site improving your herd health. Catch basins to collect runoff can also be utilized to protect surface water quality. However engineering of catch basins can quickly become costly.

Having a vegetative cover on your wintering site can also affect runoff. It is essential to have a sufficient litter layer or high enough crop stubble to ensure that your livestock's hoof action does not reduce the effectiveness of reducing runoff. Having an adequate vegetative buffer between your wintering site and watercourse can reduce water pollution. Six meters is recommended, however this would increase with an increase in slope. Vegetative filters such as grassed waterways, shrub/brush or cropland can be used to dilute runoff.

Considerations for Designing Your Wintering Site

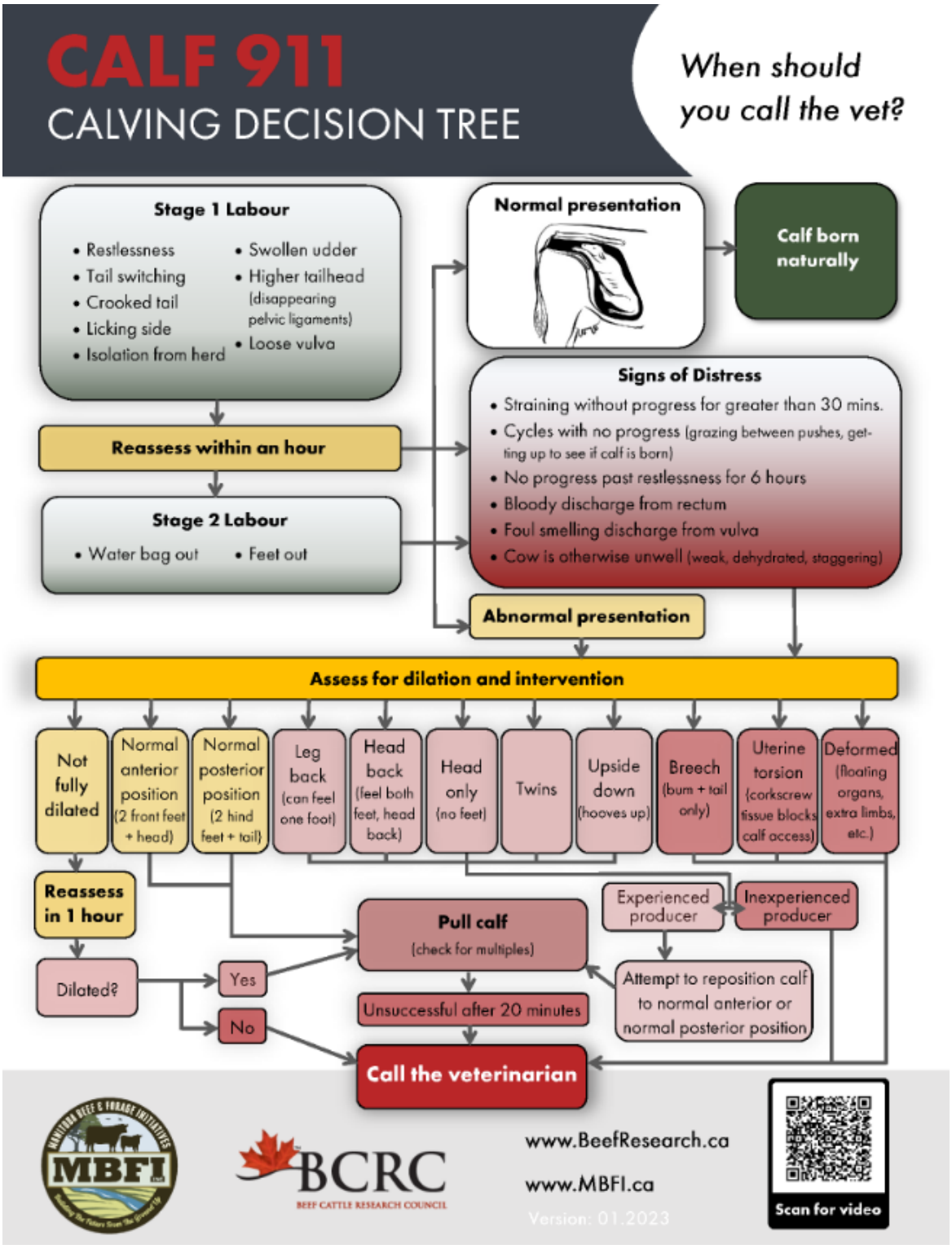


Diagrams From Cattle Wintering Sites: Managing for Good Stewardship Agdex#420/580-2

- Select a naturally elevated area for bedding to ensure drainage is controlled in a direction of least risk of water contamination.
- Provide an off-site water supply or dugout.
- Increase the size of the wintering site area. This decreases the livestock stocking density and concentration of manure on the site.
- Increase the distance between major manure sources such as bedding and feeding areas and the watercourse to reduce manure accumulation. Locate one or both of these areas near or at the top of the slope where it will be the most beneficial for crop growth.
- Create a vegetative buffer between the feeding site and the watercourse. The greater the width and height of vegetative cover, the more

effective the buffer. The buffer should be harvested as feed to prevent an overload of nutrients in that area. Be aware that this can become a sink and later saturated as a source of contaminants as the system is overloaded and nutrient overflows occur.

- Move the feeding site frequently during the feeding period. This disperses the manure and reduces the amount of contamination leaving the site.
- Consider alternating several sites from winter to winter to minimize nutrient buildup.
- Use a natural wetland or treed buffer strip to make use of runoff nutrient which can later be harvested as a feed crop.
- Divert off-site water around the feeding site. Construct berms or landscape the site to alter its slope and drainage.
- Install a catch basin to contain runoff.
- Select a site that is not subject to erosion.
- Use fencing to control the time of use or to keep cattle out of sensitive areas.
- Remove manure where it has built up over the winter season as this prevents the movement of nutrients as the soil thaws or it is subjected to precipitation. Harrow the area in the spring to disperse manure and straw.



Summer Job Opportunity

Summer Agricultural Research Technician

Full Time from May 1st to August 31st, 2023
Job Location: Fort Kent, AB
Number of Positions 2-3

Lakeland Agricultural Research Associations (LARA) is a producer run organization conducting leading edge applied agricultural research and extension in Northeastern Alberta. Our Vision is to make Alberta's agricultural producers profitable and sustainable through applied research, demonstration and extension in areas of forages, livestock, annual crops, specialty crops, environmental conservation and regenerative agriculture.

We are looking for 2-3 ambitious and hard-working Summer Agricultural Research Technicians to be a part of our team. As Summer Agricultural Research Technicians, you will work closely with our program coordinators and will gain hands on experience in all aspects of the applied research process. This includes field design and planning, implementation of projects, collecting and analysing data and preparing extension activities.

We encourage students of agriculture and other natural science degree and diploma programs to apply. Students in fields other than natural sciences with a strong interest in agriculture will be considered. Ideal candidates will have an interest in agriculture, a strong work ethic, excellent communication and computer skills. We are looking for someone with a genuine interest in the agricultural industry!

If you enjoy time outdoors, you will appreciate the field work associated with agricultural research. Duties will include seeding preparation, seeding, mowing, spraying, harvesting, plot maintenance, roguing, soil sampling and data collection. There will also be occasional handling of livestock. Candidates should have the ability to work in a team environment and under minimal supervision.

Agricultural and machinery experience will be considered an asset, but it is not imperative as training will be provided. Please indicate on your application if you have experience with trucks, trailers, loading equipment, tractors etc. Applicants must hold a valid driver license and have a safe driving record. Local applicants are encouraged to apply. Wage is negotiable depending on experience. Start and end dates are flexible.

This position will remain open until a suitable candidate is found. Only candidates selected for an interview will be contacted.

For more information or to send a resume, contact:

Kellie Nichiporik, Executive Director
Lakeland Agricultural Research Association
Box 7068 Bonnyville Alberta, T9N 2H4
Phone:(780) 826-7260. Email: sustainag@laraonline.ca

Sustainable Canadian Agricultural Partnerships

To support continued innovation, growth and prosperity, the Sustainable Canadian Agricultural Partnership (Sustainable CAP) has launched its programs. This 5-year (2023-2028), $3.5 billion investment includes $1 billion in federal programs and activities and $2.5 billion in cost-shared programs and activities by federal-provincial-territorial governments. The Sustainable CAP framework represents a cost-shared federal-provincial investment of $508 million over 5 years towards strategic programs and services for the agriculture and agri-food industry in Alberta.

Resilient Agricultural Landscape Program (RALP)
The goal of the Resilient Agricultural Landscape Program is to increase environmental resiliency of agricultural landscapes by accelerating adoption of Beneficial Management Practices (BMPs) that maximize provision of Ecological Goods & Services (EG&S), such as carbon sequestration, improved water quality and biodiversity enhancement. Funding is offered on a per-acre payment basis for a term of three years. Funding of up to $150,000 for Primary Producers, and up to $300,000 for Indigenous applicants or groups such as Grazing Reserve Associations and Community Pastures is available for select BMP projects. The Program opens for applications on April 3, 2023. To review the BMP funding list and other program details, visit www.alberta.ca/resilient-agricultural-landscape-program.aspx

Farm Technology Program (FTP)
The Farm Technology Program supports the adoption of innovative technology that minimizes agricultural waste, optimizes farm efficiency, or improves the security of farming operations. Funding of up to $48,000/applicant is available for items that fall under the Farm Technology Stream, and up to $2,000/applicant for items in the Farm Security Stream. Program funding is retroactive to April 1, 2023. To review the funding list and other program details, visit www.alberta.ca/farm-technology-program.aspx

Efficient Grain Handling Program (EGHP)
The Efficient Grain Handling Program funds grain handling equipment that shows a significant energy efficiency improvement over standard practice. Funding of up to $100,000/applicant is available for approved projects. Program funding is retroactive to April 1, 2023. To review the funding list and other program details, visit www.alberta.ca/efficient-grain-handling-program.aspx

Water Program
The Water Program supports agricultural water management by helping primary producers adopt agriculture water better management practices and priority actions. This supports better management of risks to water quality and supplies, adaptation to climate variability and the efficient use of water resources. To review the funding list and other program details, visit https://www.alberta.ca/water-program.aspx

On Farm Value Added Program
The On-Farm Value-Added Grant Program supports primary producers in adding value to their agricultural products to grow sales, expand production capacity, explore market opportunities and create jobs in Alberta. To review the funding list and other program details, visit https://www.alberta.ca/on-farm-value-added-program.aspx

Cattle Injuries on the Rise
Low Stress Cattle Handling
https://cchsa-ccssma.usask.ca/aghealth/documents/resources-by-theme/Low%20Stress%20Cattle%20Handling%20-%20Revise_Oct%202018.pdf

Why is it important to incorporate low-stress cattle handling techniques?

Low-Stress cattle handling is safer for the animal and safer for the handler.

Dangerous situations that involve cattle are avoidable with proper training and competence. Cattle have a significant weight advantage, can move quickly, and can be unpredictable. It takes skill and practice to handle them safely.

There were 65 animal related fatalities in Canada between 2003-2012.

45% of these injuries were caused by cattle

Every year there are reports of injuries and fatalities resulting from being crushed or kicked by cattle.

You can decrease unexpected medical expenses due to injuries, days lost from work as well as the cost of replacement labour by learning Low Stress Cattle Handling techniques and making sure everyone in your operation practice the same techniques.

Animal Science Research

Dr. Temple Grandin, an applied animal behaviour scientist at Colorado State University, developed low stress livestock handling theory in the 1980s. Dr. Grandin's research demonstrates that low stress handling improves productivity including faster weight gain, more milk in dairy cows, less disease, and fewer injuries.

Researchers have incorporated animal science into animal handling. Animal science research helps producers understand why animals react to stimuli in their environments. It is possible to provide systems for cattle handling that are low stress and have a much higher level of safety for the workers when one understands animal behaviours.

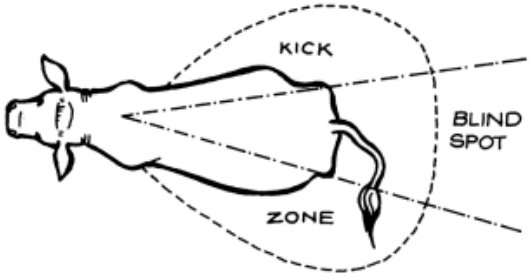
Today, many trainers offer classes in low stress livestock handling in Canada.

NEVER handle cattle when you are stressed or in a bad mood! Animals will pick up on this and it will become even more difficult to handle them.

This year there have been several reports of serious injuries due to cattle, mostly when handling calves. Cattle exhibit maternal instinct with their young which cause them to be more difficult to handle. The new mother will often perceive you as a threat and charge to protect their newborn. The younger the calf, the more protective the mother. Keep calves as close to the cow as possible when handling. Heifers can be very dangerous because they have never had a calf and it is impossible to know how they will react to motherhood.

Extra precaution should be taken. Take note of cows that have shown signs of aggression or charged before. They will often repeat the behaviour and should be culled from your herd.
Every animal's unique personality can be determined by a mixture of genetic factors and its experiences. Social, aggressive, fearful, active and exploratory traits will make up the unique temperamental profile of each animal, hence determining their distinct response to the same stimulus. Every animal has the potential to be or become unpredictable. When introduced to new stimuli, an animal can become anxious. By knowing the signs of aggression in cattle it is possible to stay out of dangerous situations. Proper handling and culling cattle with dangerous temperaments creates a safer herd.

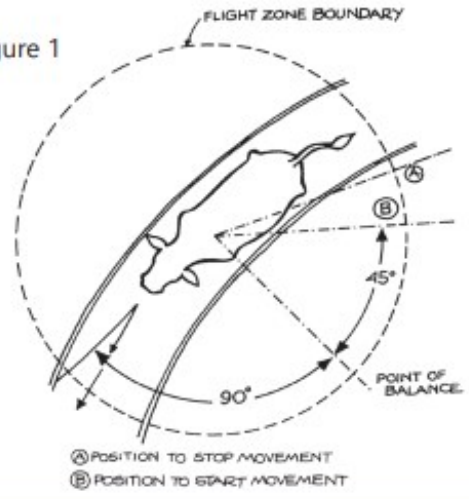
Animal Instincts
Cattle experience the world with panoramic fields of vision. This means that cattle have eyes that are located on the sides of their heads. This gives them a very wide range of vision but they have a blind spot. Animals are easily alarmed when a person enters their blind spot, especially if they are moving quickly. Cattle will protect themselves by kicking into that space which is known as the kick zone.



Easy rules to keep in mind • Separation from the herd may cause anxiety & unpredictable behaviour. Limit the amount of time the animal has to be alone or keep the herd nearby. • Avoid separating animals at feeding time. • Cattle will "follow the leader." • Cattle have poor depth perception and need time to adjust to changes in lighting, floor and other changes; calming cattle once they are agitated may take 20-30 minutes. • Cattle have sensitive hearing and are agitated by shouting, barking dogs and any sudden noises. • New situations may cause anxiety and unpredictable behaviour. • Routine is comfortable and reassuring. • Cattle form a lasting impression of painful or frightening events which may result in future handling problems. • Illness or injury may cause unpredictable behaviour. Note: Cattle will kick towards the injured side. • Cows have strong maternal instincts and can be aggressive when protecting their young. • An animal protects its territory. A bull will dominate an area. • The Flight Zone is considered safe, personal space for the animal. Entry into the space will create a response. • All grazing animals have wide-angle vision but can't see behind themselves. It is nature's way of protecting this blind spot for the animal to kick into that space called the kick zone.

Flight Zones
This technique requires practice and patience as the Flight Zone differs with each animal. The proper use of this zone will enable you to move cattle in a desired direction. • Cattle will move away from you to keep you out of their Flight Zone • The Flight Zone corresponds to the animal's personal space • To locate the edge of the Flight Zone, move towards the animal. To acknowledge your presence at the edge of the Flight Zone the animal will raise its head, stop eating, turn to you while chewing and move to face you. Once they start to move you are in the Flight Zone. • Entering the Flight Zone will cause movement that is usually away from you. Deep hurried invasion of this space can prompt fear, agitation, and rapid movement away from you, or aggression and movement towards you. • The size of the Flight Zone diminishes with frequent, gentle handling. Managing the Flight Zone When you approach an animal from outside its Flight Zone, the animal will turn and face you. To initiate movement, apply gentle pressure at the edge of the Flight Zone (Figure 1). Upon entering this area, the animal will turn away. Do not continue to pressure the animal's Flight Zone, once it is already moving away from you. The size of this Flight Zone depends on genetics, temperament and the quantity and quality of human contact the animal has received. Don't push an animal to move if it has nowhere to go or if it cannot find an exit.

Figure 1



Wild Wheat Genes can Make Crop More Tolerant to Extreme Heat

By Earlham Institute Release

Researchers have been putting wheat to the test in a Mexican desert to see if varieties with genes from wild relatives are better able to deal with hot conditions.

Scientists from the Earlham Institute in Norwich, England, and the International Maize and Wheat Improvement Centre in Mexico collaborated on the study. The latter, known as CIMMYT, has the largest maize and wheat gene bank in the world.

Most of the wheat grown around the world has limited genetic variation, said one of the study's authors.

"Wheat is responsible for around 20 per cent of the calories consumed globally and is widely grown all over the world," said Anthony Hall of the Earlham Institute.

"But we don't know whether the crops we're planting today will be able to cope with tomorrow's weather. To make matters worse, developing new varieties can take a decade or more, so acting quickly is vital."

Researchers set up a two-year field trial in Mexico's Sonora desert and studied 149 wheat lines. The varieties ranged from widely used elite lines to those selectively bred at the CIMMYT to include DNA from wild relatives and landraces from Mexico and India. The latter lines were drawn from the centre's breeding and pre-breeding programs.

"Crossing elite lines with exotic material has its challenges," said Matthew Reynolds, co-author of the study and leader of the wheat physiology program at the centre.

"There's a well-recognized risk of bringing in more undesirable than desirable traits, so this result represents a significant breakthrough in overcoming that barrier and the continued utilization of genetic resources to boost climate resilience."

The seeds were sown later in the season to force the plants to grow during hotter months, putting crops under the kind of heat stress that is predicted to become the norm.

They found the plants bred with exotic DNA achieved a 50 per cent higher yield over wheat without this DNA. The exotic lines didn't perform any worse than the elite lines under normal conditions.

Researchers sequenced the plants to locate specific genetic differences responsible for increased heat tolerance. They identified genetic markers that could allow the targeted introduction of beneficial exotic DNA into elite lines, offering a quick way to improve climate resilience and mitigate against widespread crop failures.

"As we try to produce more food from less land to feed a growing global population, we urgently need to future-proof the crops we're planting so they can thrive in an increasingly hostile climate," said Benedict Coombes, study author and PhD student at the Earlham Institute.

"The key to this, we are increasingly finding, may lie within largely untapped genetic resources from wheat's wild relatives and landraces."

Drone photo at the CIMMYT wheat fields near Sonora, Mexico. Photo: *International Maize and Wheat Improvement Centre (CIMMYT)*

The researchers suggest breeding programs incorporate heat tolerance traits as a pre-emptive strategy to produce wheat crops that can cope with a less predictable climate.

"This is science we can now use to make an impact almost immediately," added Hall. "We've done the field trials, we know what genetic markers we're looking for, and we're starting conversations with wheat breeders, so this is hopefully going to be the first of many steps to contribute to global food security in the coming years.

"The discoveries we're making, and the action we're taking, will hopefully mean people around the world can continue to have nutritious food on their plates."

https://www.albertafarmexpress.ca/news/wild-wheat-genes-can-make-crop-more-tolerant-to-extreme-heat/

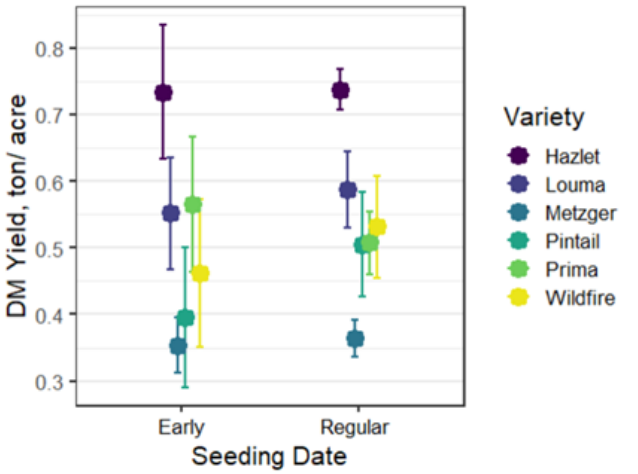
Early Spring Seeded Winter Cereals can Provide Additional Grazing Opportunities During Periods of Drought

By Megan Wanchuk

The Lakeland region has experienced two dry years back-to-back. As a result, many pastures have been overgrazed the past two years, without ample time for recovery, as producers searched for ways of extending available feed sources. Overgrazed pastures tend to produce less the following year and require additional management strategies that include reduced grazing days to ensure long-term recovery.

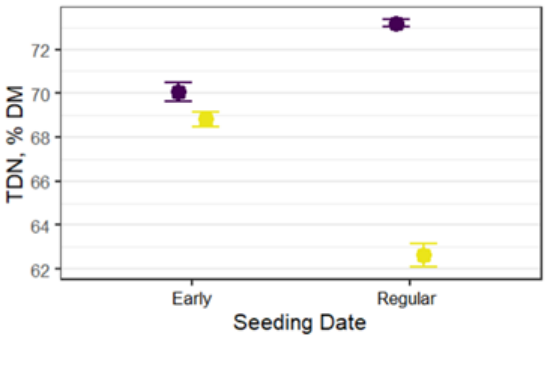
Winter cereals seeded in fall have been shown to provide an early season grazing opportunity for livestock producers. This could allow for delayed turnout into stressed perennial pastures, thus providing more recovery time for those forages. A second option is to seed winter cereals in the spring, which prevents the cereals from entering a reproductive stage, meaning that these winter cereals would remain vegetative through summer and fall. Spring-planted winter cereals can maintain yield and quality late in the summer and into the fall under simulated pasture treatments. This is an important advantage to their use as spring cereal production tends to decline after the end of July. Current research into spring seeded winter cereals has focused on seeding during typical seeding times when soil temperatures are over 10°C. This project compared different winter cereals seeded in early spring (soil temperatures at 2°C) to regular seeding (soil temperature above 10°C).

Early seeded plots were seeded on April 29, 2022, and the regular seeded plots were seeded on May 27, 2022. Plots were harvested with a plot forage harvester when the average plant height was 30cm to simulate grazing. Plot yield and forage quality data were collected at each harvest. Treatments included 2 varieties of winter triticale (Metzger and Luoma), 2 varieties of winter wheat (Pintail and Wildfire) and 2 varieties of fall rye (Prima and Hazlet) for a total of 6 treatments in the trial.

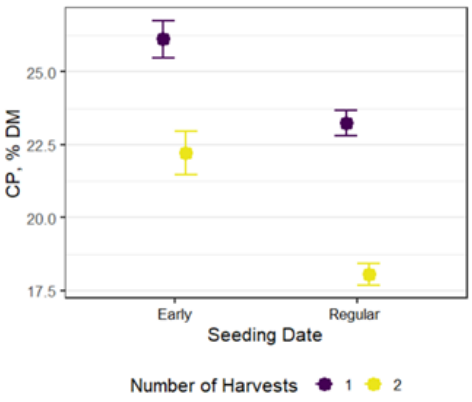


The first harvest both the early and regular seeded treatments was between seven and eight weeks after seeding. After the first harvest, early seeded regrowth was harvested in three weeks. The third harvest was seven weeks after the second harvest. Regular seeded regrowth was harvested seven weeks after the first harvest. Overall, the early seeded treatment produced more total yield than the regular seeded treatment. Plot yield per harvest was not different between the early and late seed treatments, or harvest number. Therefore, the increased total yield in the early seeded treatment can be attributed to the extra harvest. Hazlet and Louma were the top two yielding varieties. Hazlet produced significantly more yield than Metzger, Pintail, Prima, and Wildfire.

Crude protein was not different between varieties, but the early seeded treatment had higher CP content than the regular seeded treatment. The first harvest had higher CP than subsequent harvests. Total digestible nutrients were significantly higher in the first harvest than in subsequent harvests but were not different between varieties or seeding dates.



During periods of dry conditions, early seeded winter cereals can be a viable alternative grazing resource. By seeding early, more grazing periods can be obtained with higher CP forage over regular seeding dates. This can be used as an alternative feed source during drought years reducing grazing pressure on perennial pastures, the need to buy dry feed or the need to rent alternative pasture. The year after a drought, this could be used as a method to defer grazing on drought-stressed pastures until later in the grazing season and provide more rest for these pastures throughout the summer. Furthermore, by seeding early the winter cereals can take advantage of any early growing season moisture that might occur before regular seeding dates.



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

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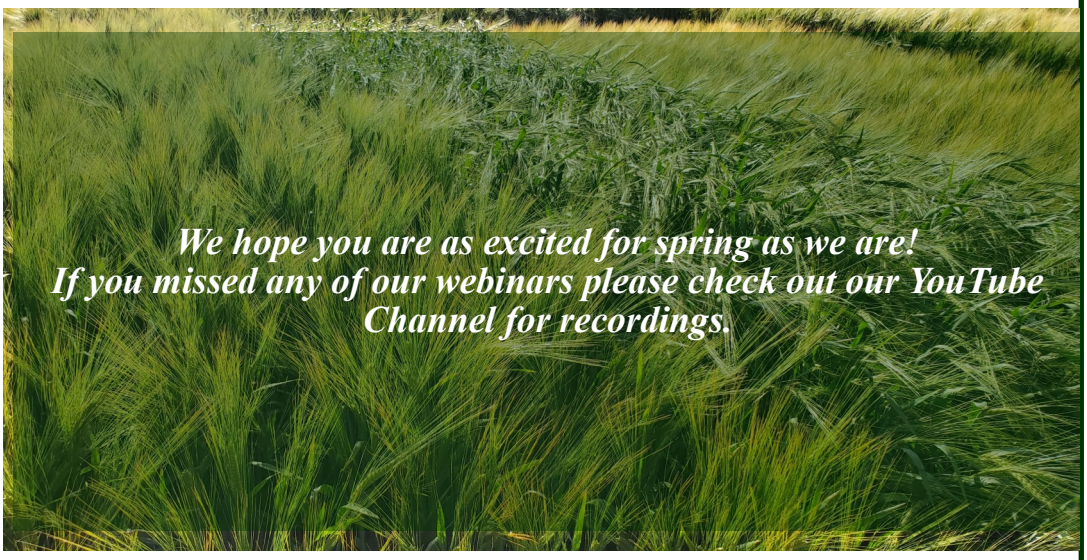
Josh Crick *(ASB alt)*	Colette Borgun *(ASB alt)*	Louis Dechaine *(ASB alt)*	Linda Fenerty *(ASB alt)*

Jay Cory *(LFA Rep)*



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