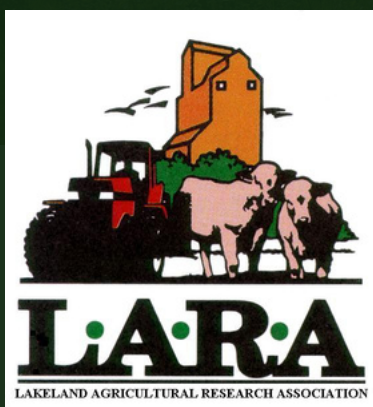


# Grow With Us

2023, Issue 2



July/August 2023



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## The Fundamentals of Replacement Heifer Selection using Genomic Indexes

*by Livestock Gentec*

LARA and Livestock Gentec thank you for attending the Round-Table session on heifer selection using genomics tools. We hope you enjoyed the day and found the information on how to optimize your heifer selection to be practical and useful.

To keep the learnings top-of-mind, we pulled together some of the most relevant take-away messages discussed during the session.

### Summary of Key Points:

1. Genomics tools are available and deliver rapid improvement in cow/calf productivity metrics if properly implemented.
2. Fertility and health traits are the most significant profit drivers in the cow-calf sector, and these are primarily driven by hybrid vigour.

Increases in hybrid vigour can significantly increase a herd's pregnancy rate, weaning rate, and lifetime productivity. For many commercial herds, this results in an additional 2-3 calves weaned for every 100 cows in the herd every single year.

3. Heifer Fertility can be predicted by the characteristics assessed in the Replacement Heifer Profit Index™ – the most predictive of which is the hybrid vigour score determined via the genomic breed composition. The Replacement Heifer Profit Index™ captures nine other traits that have a significant impact on cow/calf profitability, while other metrics and management practices are best tracked at the producer level.

#### 4. Best Practices in the Use of Genomics:

##### a. Keep cow-based records including:

- i) Cow ID
- ii) Date of entry into the herd
- iii) Cull date and reason for cull
- iv) Date of calving each year

##### b. Have a DNA testing strategy – order of priority:

- i) breeding bulls
- ii) heifers
- iii) calves and cows

##### c. Improve or maintain herd hybrid vigour.

##### d. Sort cows and heifers by Replacement Heifer Profit Index™ score

##### e. Stick with practices that are known to work;

i) Select for bulls that are proven to work given your environment and your management practices,

ii) Send individual bulls with superior progeny results out for first cycle,

iii) Use superior bulls on high Replacement Heifer Profit Index™ index cows to produce replacement heifers using sires that are better suited to maternal vs. terminal calves, and

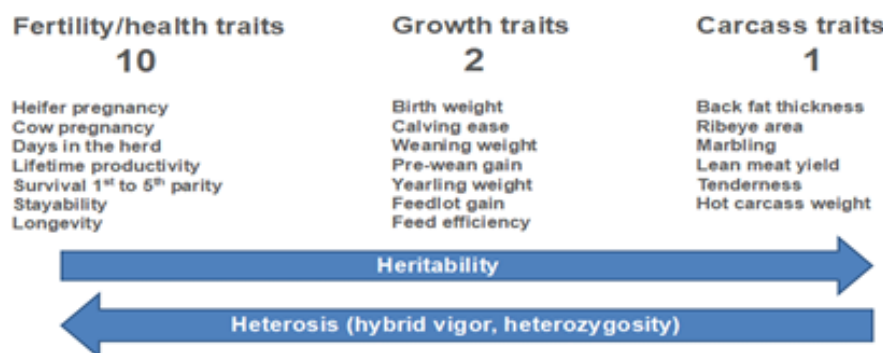
iv) Cull and replace bottom Replacement Heifer Profit Index™ cows (10-15% every year).

#### 5. Supporting Evidence:

Table 1 summarizes a Rimbey, AB, producer's experience utilizing the Replacement Heifer Profit Index™.

Similarly, figure 1 shows the open-rate of crossbred heifers taken across 10 participating Alberta cow-calf herds. Both table 1 and figure 1 reflect the ongoing validation work being done in further developing and validating the Replacement Heifer Profit Index™.

### Relative Value of traits to the cow-calf sector



Trenkle & Willham 1977; Melton 1994; Barwick & Nicol 1993

## Replacement Heifer Profit Index Score™

A DNA based Selection Index for Commercial Cow-calf Producers

**Breeding Goal:** Consistently improve feed efficiency, fertility and longevity of replacement heifers while controlling production costs.

- ❖ Developed from > 10,000 mating opportunities & ~1300 cows from LRDC and Kinsella Ranch
- ❖ Hybrid vigour plus 9 production & fertility traits
- ❖ Ongoing evaluation in 2000 heifers from Alberta commercial herds
- ❖ Will add these and other commercial females to improve accuracy



= Hybrid Vigour +

### Trait

- (-) Birth weight
- (-) Julian birth date
- (-) 200-day wean weight
- (+) Feed intake
- (-) Residual feed intake
- (-) Feeding event duration
- (+) Pre-breed weight
- (+) Pre-breed backfat
- (-) Age at first calving

12



6. High-indexing heifers generate more income ... as calculated from the graph to the right using ABP feeder prices (April, 2023):

6 more calves per 100 replacement heifers exposed to natural breeding result in

+ \$9,450 from increase weaned calf income (\$3.15/lb, 500 lb calves)

+ \$5,700 from not having to replace six heifers (\$950/heifer)

- \$2,500 to genotype 100 heifers

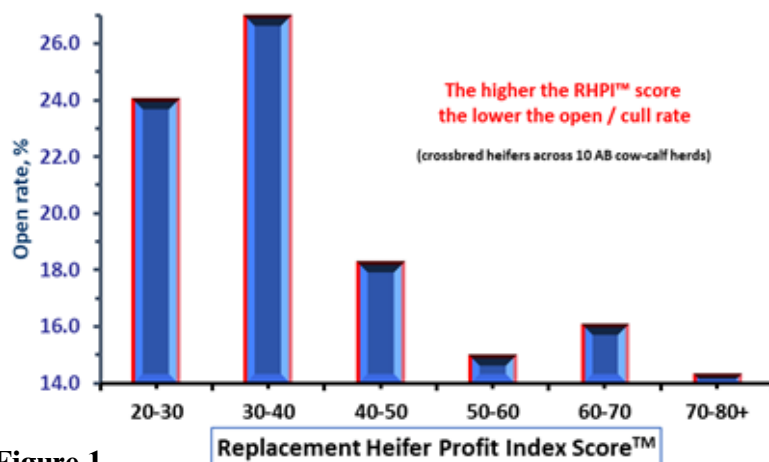
+ \$12,650 increase in net income or a 5:1 return on investment.

7. Discounted \$15 genotyping of replacement heifers and breeding bulls is available through Livestock Gentec.

For additional information, herd specific questions or genotyping contact:

**Table 1**

	RHIP™ Score	Open Cows	All Cows	2yr Old	3yr Old
Where did the culls come from (Herd of 155)	High Vigour above 50%	7	23%	33%	17%
	Low Vigour Below 50%	23	77%	67%	83%
	<b>Total</b>	<b>30</b>	100%	100%	100%



**Figure 1**

Lakeland Agricultural Research Association: (780) 826 - 7260 / [director@laraonline.ca](mailto:director@laraonline.ca)

and / or

Livestock Gentec: (780) 248 - 1740 / [lsgentec@ualberta.ca](mailto:lsgentec@ualberta.ca)

1. Metrics of importance to cow/calf profitability: Hybrid vigour score / breed composition based on a DNA analysis; birth weight; Julian birth date (Birthdate – January 1st); age at the start of the breeding season; weight and body conditioning score pre-breeding; age at 1st calving; heifers retained from each cow (dam); calving interval between 1st and 2nd calving; days in the herd; and lifetime productivity measured as pounds of calf weaned over a lifetime.



## 10 Reasons to Grow Pulses

*by Alberta Pulse Growers*

Whether you've never grown pulses or haven't grown them in a while, we've got 10 good reasons why you should think about growing pulses.

1. Pulses reduce your input costs. Pulses fix their own nitrogen, so there's no need for the added cost of nitrogen for your crop.

2. Pulses spread your workload. The growing season for pulse crops differs somewhat from that of other crops, in some cases allowing you to seed and harvest earlier or later than other crops.

3. Pulses give you diversified marketing options. You can grow pulses for export or domestic use for the human consumption, animal feed, or fractionation markets.

4. Pulses break disease cycles in your field. A four-year crop rotation that incorporates pulses can reduce incidences of disease in your fields.

5. Pulses provide a second-year yield boost. Studies have shown that higher yields and quality of canola (15-96 per cent increase in yield) and cereals (41-52 per cent increase in barley yields, 20-47 per cent increase in wheat yields) can be seen in the year following pulse crops.

6. Pulses grow in a variety of production systems. You have a lot of options when it comes to growing pulses, as they can be seeded with a variety of equipment and grow in both conventional and zero till systems under irrigation or on dry land.

7. Pulses are profitable. Prices for pulse crops

are very competitive with other crop types, and reduced input costs help contribute to a healthy bottom line.

8. Pulses improve your soil tilth. Pulses make your soil healthier by putting nutrients, including nitrogen, back into the soil.

9. Pulses promote soil conservation and sustainable farming practices. Crops like pulses that fix nitrogen can help reduce CO2 emissions from agriculture, and because of their water use efficiency and ability to grow in zero till systems, pulses may have a lower environmental footprint than other crop types.

10. Pulses are an up-and-coming crop type that grows every year. Pulse acres in Alberta have hit the 2.4 million mark and continue to grow. With increased acres come increased marketing options, making pulses an up-and-coming crop type with plenty of room to grow.

Any way you look at it, pulses are good for your farm.





## What is Happening in the Greenhouse 2023

by LARA Staff

### Tomatoes

We have 12 varieties of tomatoes in our greenhouse, including large, slicing varieties – Celebrity Plus, Cosmonaut Volkov, Giant, Stupice, Watermelon Beefsteak; Roma varieties – Juliet, San Marzano, Amish Paste; cherry tomatoes – Yellow Gooseberry, Sweet Orange. We also have a red and gold streaked variety called “Get Stuffed.” As its name suggests, it has a large cavity making it excellent for stuffing with your favorite salad. Many plants are in bloom now.

### Peppers

Our pepper patch contains 7 varieties ranging from relatively sweet (Szegedi) to hotter chiles and habaneros (Bulgarian Orange, Hungarian Hot, Orange Habanero). The reported heat of this group can be as high as 300 000 Scoville heat units. Our remaining two peppers – Ghost and Carolina Reaper can approach 2 000 000 Scoville units - HANDLE WITH CARE!

### Brassicas

We also have a small selection of members of the brassica family – including cabbage, cauliflower, Brussels sprouts and broccoli. All the plants in the greenhouse are thriving –obviously “enjoying” the 35 to 40°C temperatures.



CARA SOIL HEALTH LAB PRESENTS

# MASH

**FIELD WEEK AUG 14-17<sup>TH</sup> 2023**

AUGUST 14 <sup>TH</sup>	11AM-3PM	T. KUHN SITE & CARA SH-Lab
<b>DAY 1 OPEN HOUSE → VISIT OUR LAB AND/OR COME TO THE FIELD!</b>		
AUGUST 15 <sup>TH</sup>	9AM-5PM	T. KUHN SITE & CARA SH-Lab
<b>DAY 2 KID'S SOIL HEALTH CAMP</b>		
SOIL HEALTH ACTIVITIES IN THE FIELD + LAB (5-10 YEARS OLD)		
AUGUST 16 <sup>TH</sup>	8:30AM-5PM	OYEN SENIORS CENTRE & T. KUHN SITE
<b>DAY 3 ANNUAL FORAGE CROP OVERVIEW</b>		
DR. AKIM OMOKANYE, POBFA		
<b>REGENERATIVE FARMING WITH A BIO-REACTOR</b>		
SHORTY FENSKY, PRODUCER		
<b>SOIL HEALTH JOURNEY</b>		
JANA VON FREIER, PRODUCER		
<b>T. KUHN SOIL AMENDMENT TRIAL SUMMARY</b>		
DR. YAMILY ZAVALA, CARA SH-Lab		
<b>IN-FIELD SOIL SAMPLING PROCEDURES</b>		
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <b>DAY 2</b> LUNCH + LIGHT SUPPER OVERNIGHT CAMPING @ THE FIELD WITH SHEEP!         </div> <div style="width: 45%;"> <b>DAYS 3 + 4</b> COFFEE LUNCH + SUPPER OPTIONAL OVERNIGHT CAMPING         </div> </div>		
AUGUST 17 <sup>TH</sup>	8:30AM-5PM	OYEN SENIORS CENTRE & T. KUHN SITE
<b>DAY 4 ANNUAL FORAGE CROP OVERVIEW</b>		
DR. AKIM OMOKANYE, POBFA		
<b>REGENERATING THE DIVERSITY OF LIFE IN SOILS HOPE FOR, FARMING, RANCHING, NUTRITION, ENVIRONMENT, HEALTH + CLIMATE!</b>		
DR. DAVID JOHNSON		
<b>JOHNSON-SU COMPOSTER BIOREACTOR WORKSHOP</b>		
DR. DAVID JOHNSON + HIS WIFE, HUI-CHUN SU JOHNSON CO-CREATORS OF JOHNSON/SU COMPOST BIOREACTOR.		

**HAVE QUESTIONS? REGISTER WITH US:**

CALL US: 403-664-3777 OR  
EMAIL US: CARA-3@TELUS.NET

## Five Simple Tips to Keep Your Crops Market Ready

*by Keep it Clean*

Canadian agricultural producers work hard to produce crops that meet the highest standards of quality and safety. Domestic processors, grain buyers and export customers trust the quality and cleanliness of these crops but are increasingly testing shipments for levels of pesticide residues and traces of disease to ensure contract specifications are being met.

As a grower, the decisions you make for your farm today can make a big difference tomorrow. Help maintain access to key markets and protect Canada's reputation for quality and protect your investments by keeping it clean this growing season.

### **Simple Tip #1 Use Acceptable Pesticides Only**

Only apply pesticides that are both registered for your cereal crop in Canada and won't create trade concerns. Talk to your grain buyer to ensure the products you plan to use in 2021 are acceptable to domestic and export markets. One product of special concern is glyphosate, which is under increased consumer scrutiny. See tip #2 for important pre-harvest glyphosate guidelines.

### **Simple Tip #2 Always Read and Follow the Label**

Always follow the label for product rate, timing and pre-harvest interval (PHI). PHI is the amount of time that must pass between the last application of pesticide and swathing or straight-cutting. Harvesting grain too soon after pesticide application may result in unacceptable residues.

For example, glyphosate should only be applied for pre-harvest weed control once grain moisture is less than 30 per cent in the least mature areas of the crop. Applications made before the correct stage increase the risk of unacceptable residue in the grain.

### **Simple Tip #3 Manage Disease Pressure**

Seed the most disease-resistant varieties available to protect your crop against fusarium head blight (FHB). FHB may produce mycotoxins such as deoxynivalenol (DON) on grain, which is strictly limited by importing countries.

Along with supporting access to key markets, an integrated disease management plan in cereals helps to maintain your yield and profitability. If hot, humid or wet conditions persist during head emergence and flowering, consider applying a foliar fungicide to help protect the crop from FHB. As well, avoid irrigating the crop during flowering.

### **Simple Tip #4 Store Your Crop Properly**

Ochratoxin A (OTA) is a potent mycotoxin that can form on stored cereal grains in high moisture conditions. OTA is produced by *Penicillium verrucosum*, a naturally-occurring soil fungus; but, unlike DON, OTA forms exclusively in storage. To mitigate the risk of OTA forming in your grain, keep bins and grain handling equipment clean, ensure crops are harvested or dried to a safe level for storage. Even fine droplets of condensate inside the bin can allow the fungus to grow.

### **Simple Tip #5 Deliver What You Declare**

Remember, the mandatory declaration of eligibility is a legally binding document. When you sign the declaration at the elevator, you are making a legal assertion that your crop is the variety and/or class you have designated and whether your grain may contain residues of specific crop input products.

We are all in this together! By doing your part to keep your crops market-ready, you help keep markets open for all. For more information, visit [keepingitclean.ca/cereals](http://keepingitclean.ca/cereals)



## Building Soil With “Wasted” Grass

by Greg Judy, *Green Pastures Farm*

By concentrating on combining our cow herds into one large herd as many months of the year as possible we have an easier time of building a full recovery period between grazings. The huge dividends from this management decision are starting to add up in much more forage grown in the growing season. Droughts are much easier to navigate as well.

Our cow mob is made up of June calving and fall calving South Poll cows. The South Poll is a red hided animal that was developed by Teddy Gentry of Fort Payne, Alabama. It is very hardy on grass only grazing systems. These cows have done nothing but excel in Missouri heat and humidity plus handle our winters very well. They are a four-way cross consisting of Red Angus, Senepol, Barzona and Hereford. They are very slick hided, which makes them excel in heat, but they do grow a nice winter hair coat for Missouri winters. They are very adapted to fescue grass which is the primary grass in Midwest.

Our goal is to get everything calving in June because we can get our cows in a body condition score of 6.5 by the time they calve. This is critical for a quick high percentage breed back after calving. Dick Diven has done a lot of research showing the importance of cows calving with a 6.5 body condition score and a tremendous breed back is the result.

In central Missouri it is tough to put a lot of weight on a pregnant cow coming out of winter with April grass. The grass in this time period is so high in protein that the cows have a hard time keeping on weight, let alone putting on weight. The May grass is a different story: the weight just piles on them.



Since switching to Holistic High Density Planned Grazing several years ago our rest periods have tripled over our previous grazing system. By moving the mob 1-2 times per day depending on the growing season and moisture conditions we are always keeping the cows in fresh recovered pasture strips. We are 100% focused on animal performance mode, getting as much quality grass through our cows daily as possible. Our cows do eat some of the seed heads, but most of them get trampled as the cows are ripping off the long succulent leaves down in the dense canopy.

As far as getting them to eat rank forage, we do not have to force our cows to do that. Our recovered pastures now have so many different plant species growing that there is always something tender and growing down in the mature grass sward. As the cows seek out these tender palatable plants they trample the ranker forage on the ground. The pinkeye issue has not been an issue at all this year, knock on wood. We have not had one case of pinkeye in the entire mob. This is probably the most amazing statistic for me. We always in the past have had some pinkeye in a few calves.

The biggest reason we have not had any pinkeye this year I believe is because we have been focusing more this year on high animal performance, thanks to Ian Mitchell Innes's constant comments on the importance of focusing on animal performance. We watch at 60 days before calving up until the time we take out our bulls after our cows are bred. Ian has convinced me that any health issues that show up in an animal is a symptom of stress that the animal was subjected to 60 days or more prior to the event.

After zero health problem issues, I am sold on the importance of animal performance. 70% of the unborn calf is developed inside the cow in the last 60 days. That trumps the importance of animal performance during this time period. So if a calf gets scours, pinkeye, or any health issue it is probably because you shorted the cow on quality forage during that time period. If a cow does not get everything that she needs everyday, how can she pass on the priceless antibodies in her milk to her calf? She cannot, so the calf may have health issues.

With the help of the free solar energy and a long recovery period we are building soil like never before. Our pastures have tons of litter trampled on them daily with the mob movement. It still amazes me the amount of forage they can trample in 12 hours. We had a farm tour the 13th of June on our farms where we had about 85 Midwestern cattleman show up. One of our farms that we toured that afternoon had not been grazed since March. When I told the group that this farm had never been limed or fertilized in the last 75 years, I had some looks of doubt on some of their faces.

The history of this 160-acre farm was that it had been continuously grazed and hayed. The whole farm had 12 cows and a bull on it right before I leased it. You could hit a golf ball at any point on the farm and have no problem finding it. A lot of the hills had moss, broomsedge and cedars covering them. We cut the cedars and started increasing our animal density with long recovery periods.





The comment that I heard from several of our tour group attendees was that “This grass is too good to graze: you should be cutting it for hay!” I about choked. I quickly recovered from my choking condition and proceeded to tell them that this farm would never see a baler on it as long as I was alive!

I purposely took the tour group out into the middle of the field so that they could see first hand how thick, diverse and lush the forage was. Several people were sweating and gasping for breath when I finally stopped in the middle of the field. The grass/legume pasture was so thick that people were having trouble walking through it, myself included! This farm had seen two years of high density grazing with recovery periods that allowed the plants to fully mature before being grazed again. No seeding was done, yet there were all sorts of grasses and legumes growing profusely.

There was one grass variety that formed a clump of rich dark green blades that no one in the group had ever seen before, including me! This farm still had 21 days before it would see our mob, which would give it a 60 days since it was grazed last. Several people in the tour group asked me, “Well aren’t the cattle going to waste a lot of this forage if you try and graze it first”. First I responded that nothing in high density grazing is wasted if it is trampled on the ground by ruminating animals. We are feeding our soil microbes, earthworms, laying down ground surface litter, building soil, increasing organic matter, preventing erosion, holding water where it falls and providing bird nesting habitat! Do any of those items that I just mentioned sound like waste to you?

I bent down on my knees in front of the group and pulled back the 2 foot tall forest of grass and exposed the ground surface. All you could see was a chopped up layer of dead plants covering the soil surface. One fellow took out his pocketknife and cut a wedge out of the moist soil surface. There were 2 worms in the tiny 4” wedge of soil. A lot of people walked out of that field in disbelief as to what they had seen. No fertilizer and no inputs other than good management with high

density and long recovery periods between grazing.

On July 4th, we walked the mob two miles down public roads to this farm. I still could not tell any difference visually in the quality of the grass since June 13th. The sward was only taller, thicker, with much more mass. The cattle were grazed on 12-hour moves at 75,000 to 150,000 lbs per acre depending on the slope and terrain. I could not believe what was happening with the mob. They were absolutely doing exactly what I hoped they would do. They were eating the very best and in the process they were trampling about 70 percent of it. Man were they “wasting” forage and I was so proud of them. Good job cows. The cows were all fat and happy, the field looked like you had taken an asphalt roller to it. You could count the few lucky weeds on one hand that survived getting knocked over.

Folks this was not at ½ million pounds stocking density, 75,000 lbs was what we were using where the grass was the thickest. They still trampled all the grass on the ground, covered with a slurry of manure over the top of it. We had another farm tour two weeks after giving this area the mob treatment. The whole field looked like you had covered it with dry grass/legume hay. You could reach down and pull up the dead decaying grass layer and the ground was just perfect underneath the trampled sward. There were visual sighting of earthworms everywhere feeding on the manure slurry trampled dead grass. The legumes were exploding up through the “wasted” dead grass with only two weeks rest.

Strong new plants with multiple leaves were everywhere you looked. The tour group could not believe that I had removed the cows from each daily strip with so much quality forage trampled on the ground. Most of their comments were “Heck I would have left those cows on those daily strips an extra day and made them clean it up better, rather than strong new plants with multiple leaves were everywhere you looked. The tour group could not believe that I had removed the cows from each daily strip

with so much quality forage trampled on the ground. Most of their comments were “Heck I would have left those cows on those daily strips an extra day and made them clean it up better, rather than letting it go to waste on the ground.” There is that “waste” word again describing grass trampled on the ground.

People have a real hang-up seeing lots of grass trampled on the ground. This is our no-cost fertilizer program for our pastures that allows us to grow more forage each year than the previous year. I’ve never seen a pasture grow back any faster than that one did, where we let the cows “waste” the grass! After four weeks of rest, we went back out to the same paddock with a video camera to shoot some film of the area.

The grass was up 12 inches high with clovers evenly dispersed in the canopy. The individual leaves of the plants were the darkest lush green that I had ever seen. The thick litter was neatly placed between the plants holding in moisture and feeding the soil microbes. I bent down and pulled back the dead moist 2” layer of litter on the ground. Immediately I noticed earthworms, centipedes, big black beetles, grubs, monster ant looking things with wings, caterpillars, several different species of hard shelled worms, and much more wildlife that I can describe.

There were earthworm castings everywhere on the surface of the ground, resembling a worm bed farm! It was one of the most beautiful sights I have ever seen in my life. This was the middle of August. You normally do not see earthworms on the surface of the ground in Missouri during this time period. The soil surface had holes of all different diameters going down into the soil everywhere. It looked like a freeway of bugs had been using this area for sometime. It did not matter where I walked in the huge field, there was the same wildlife activity taking place on the soil surface.

I cut a wedge of soil out of the ground surface with my pocket knife and held it to my nose. It had a very rich earthy smell that went on forever! I literally could have spent the whole evening on that one field just

walking around pulling back the blanket of dead moist litter and watching the magnificent soil builders at work. What a pleasure it was. Folks, we don’t have another grazing planning system on the face of the earth that can build so much soil with no purchased inputs.

With all farm purchased inputs skyrocketing out of control it sure is a nice position to be in, having all this free forage grown with “wasted” grass! It sure gives you a feeling of being in control of your financial grazing future. Since switching to Holistic High Density Planned Grazing we have reduced our work load by 2/3rds. We have increased our recovery periods by 300% and increased our animal impact by 300%. Thanks to Holistic Management our daily lives just keep getting better and more enjoyable each day.

## 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.



Questions please call (780) 826-7260



# UPCOMING Summer Field Days

## St. Paul - July 25

Research trials and presentations include Regional Variety Trial Cereals, Regional Variety Trial Pulses. Featuring a discussion with SeCan's Trent Whiting on new cereal varieties.

## Fort Kent - July 27

Research trials and presentations include Cover Crop mixes for the Lakeland and Regional Variety Trial Cereals. Featuring a live drone spraying demonstration with Landview Drones.

## Smoky Lake- August 2

Research trials and presentations include Regional Silage Trial Cereals, Regional Variety Trial Oats.

## Lac La Biche - August 9

Research Trials and presentations include cover crop demonstrations for the Lakeland Region. Featuring a presentation from Livestock Gentec.

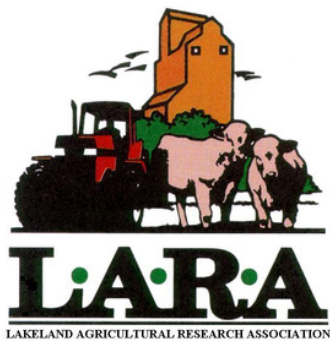
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MORE DETAILS:

📞 780-826-7260

🌐 [www.laraonline.ca](http://www.laraonline.ca)

Watch for more details  
as they become available!





# 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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