

Grow With Us

2024, Issue 5



September/October 2024



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Soil Sampling: Timing, Technique and Interpretation

by Canola Council of Canada

Soil samples indicate soil nutrient reserves available for crop uptake. This is useful any year, and especially after low-yielding or high-yielding years when reserves may be more difficult to predict. Test results will help farms set fertilizer rates specific to the needs and yield potential of each field – a key step in implementing the right rate principle of 4R Nutrient Stewardship practices.

Right time

Soil sampling just prior to seeding provides the most accurate measure of nutrients available to the crop, but this timing has practical limitations. Results may not come in time. And spring can be tough to get representative cores due to soil moisture conditions.

Late fall soil sampling can be almost as accurate and has various advantages: less time pressure to get samples collected and analyzed, especially if done after harvest; more time for fertilizer planning, including variable rate prescription maps; and the opportunity to buy the right amount of fertilizer at a lower price. (Prices are often, but not always, lower in the fall.)

- Fall timing for next year's planning. Sampling after soil has cooled to at least 10°C reduces the microbial activity that can mobilize nutrients. Soil samples collected after this activity slows down will more closely reflect spring nitrate (NO₃⁻) contents. If farms plan to band fertilizer in the fall, sampling when soils drop to 10°C (not too much lower) should allow for fall application before the ground freezes. If not planning fall applications, sampling can occur close to freeze up – as long as probes can extract good cores.
- Fall timing to assess this year's fertilizer program. Sampling immediately after combining may show what nutrients, if any, were deficient for the current year's crop and help plan for better results in next year's crop.

Cost

Custom sampling in two parts (0-6" and 6-24") and lab analysis of that two-part soil sample will cost around \$100. Cost per sample will be lower when a farm submits more samples. At \$1, or less, per acre, soil sampling will pay off if farmers use results to make more refined fertilizer rate decisions.

NEEDS ASSESSMENT SURVEY

Help us plan our 2025 research and extension!

This quick assessment survey is an important and integral part of LARA's continued performance in the Lakeland to ensure we remain relevant to the producers in our area. We would greatly appreciate your feedback by having you identify which projects, topics and/or events are of interest to you. With your valued input, LARA can put together a program that will keep the industry viable and sustainable for years to come.

The survey is available on our website www.laraonline.ca, at our office or give us a call and we can send you a copy!

Number and location of samples

Composite samples

One composite sample per field can provide a general impression of soil nutrient levels. This result is suitable to set a blanket nutrient rate for the whole field. It cannot account for the high degree of nutrient variability across a field. For the composite:

- Take 15-20 sub-samples from the most productive areas – not hill tops, not low spots, not saline areas.
- Divide each core into two or three soil depths and put them into separate pails.
- Suggested depths are 0-6" and 6-24", or a three-way split of 0-6", 6-12" and 12-24".
- With the 15-20 sub-samples separated by depth, blend those samples to create one composite sample per depth.
- Submit each depth in its own sample bag.

The benchmark composite. Farms could GPS-locate one "average acre" in the field and use that pin as a sample point each year. This can provide for more accurate comparison of samples year after year and is faster for the sampler.

Add one or two targeted samples

Farms could advance their composite sampling program by submitting separate samples from additional target areas –

hill tops, low spots, saline patches, area with lodged crops. An extra one or two targeted samples can identify fertilizer issues that would not show up in the single composite. Some scenarios:

- An area always subject to lodging may have high organic matter and the extra nitrogen kick causes lodging. It may be possible to reduce nitrogen applications in that area.
- Hill tops can be low in sulphur. If a composite sample from hill tops shows low sulphur, farmers could spread extra sulphur on a few hills. Note that canola has relatively high sulphur demand.
- Low yielding areas may have many reasons for low performance, and a targeted sample could identify those reasons. It could be something relatively easy to manage, such as low potassium. A targeted

application could boost yield results, saving the productivity of acres that were not benefiting from the blanket application.

- **In-season targeting.** Targeted sampling (soil and tissue) could identify in-season issues that could be solved with a targeted top dress. Take samples from the problem areas and compare them to samples from healthy-looking areas within the same field. By comparing results, major differences can point to the potential cause of the poor growth or lodging. If results are similar, the cause may not be nutrient related.

Zone and grid samples

Field maps from experienced advisers can specifically identify productivity zones in each field based on soil characteristics, drainage, topography, salinity and more. This could start with grid sampling (one test per acre, for example) to accurately map soil characteristics of each field. They then overlay that with topography and historic yield maps to come up with accurate and predictable productivity zones. With these zones identified, growers then collect representative samples for each zone. This could mean six or more samples per field (two depths for three zones, for example), but this method can provide meaningful results for fields with higher levels of soil variability, and can be used to create prescription maps for variable-rate fertilizer applications.

Interpretation

Soil test results from labs will include actual soil nutrient levels as well as fertilizer rate guidelines based on the crop and target yield. See the sample on the right.

A real soil test result for four composite samples from four different fields from the same farm. Sample number 1 is field 1, etc. Note similarities (low N, low P) and differences (actual K and S numbers). The guideline is calling for a

fairly high rate of K for field 3 if the farmer wants to build K. Soil reserves will supply some of that need, which is why the soil test is useful. The rest will come from fertilizer or mineralization.

Mineralization. In making nitrogen rate recommendations, labs do not usually account for potential mineralized nitrogen from organic matter. That makes sense. Predictions are difficult based on lab analysis. Mineralization is highly variable year to year and spot to spot within a field. Soil with low organic matter and low moisture will provide minimal mineralized nitrogen. Soil with high organic matter and ample moisture could, possibly, provide a large percentage of the required nitrogen in a given year. In general, soil can generate six to 30 pounds of available nitrogen per acre for each percentage point of organic matter.

Nitrogen strips. If applying nitrogen in its own blend, it is relatively easy to turn up (and turn down) nitrogen rates for a few strips. Try a few strips with 125 or 150 per cent (and 75, if you want to try a low rate) of the field rate in each field, and check how they show up on the combine yield monitor. These tests done each year will help identify yield potential and most profitable nitrogen rates for the farm. The results may support existing practices or identify a potential adjustment if your nitrogen rate is the yield limiting factor.

New soil analysis tools

Report Number:

Account Number:

To:

A & L Canada Laboratories Inc.

2146 Ashburn Road, Lumbini, Ontario, N0V 1P0

Telephone: (519) 457-2575 Fax: (519) 457-2594

AL

Reported Date: 09/23/11 09:00 Printed Date: Nov 1, 2023

SOIL TEST REPORT

Page: 1 / 2

Sample Number	Legal Land Descript:	Depth	Lab Number	Organic Matter	Phosphorus - P ppm (Bray-P)	Potassium K ppm	Magnesium Mg ppm	Calcium Ca ppm	pH	CEC meq/100g	Percent Base Saturations			
											% K	% Mg	% Ca	% H
1		12"	38864	3.8	71	101	161 M	733 VH	2120 M	6.5	6.9	18.8	2.2	32.4
2		12"	38865	3.9	61	91	170 M	684 H	3820 M	7.7	25.5	1.7	22.4	
3		12"	38866	5.2	71	121	112 M	823 VH	3010 M	6.7	6.9	24.1	1.2	
4		12"	38867	4.5	71	121	217 H	701 VH	2090 L	7.1	19.2	2.9	30.5	

Sample Number	Sulfur S ppm	Nitrate Nitrogen NO3-N ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Soluble Salts meq/100g	Saturation %P	Aluminum Al ppm	Saturation %Al	K/Mg Ratio	Chloride Cl ppm	Sodium Na ppm
1	112 VH	403	8 L	29	2.5 L	29 M	62 VH	0.9 M	0.4 L	3 L	465	0.1 G	0.07	50
2	70 H	252	7 L	25	2.6 L	29 M	53 VH	1.0 M	0.7 M	1 VL	122	0.0 G	0.08	51
3	483 VH	1739	7 L	25	3.0 M	28 M	70 VH	0.8 M	0.6 M	4 M	442	0.1 G	0.04	65
4	268 VH	965	9 L	32	3.2 M	30 H	64 VH	0.8 M	0.4 L	4 M	382	0.0 G	0.15	57

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

SOIL FERTILITY GUIDELINES (lb/acre)

Sample Number	Previous Crop	Intended Crop	Yield Goal	Lime Tons/Acre	N	P2O5	K2O	Mg	Ca	S	Zn	Mn	Fe	Cu
1	Barley (Malting)	Canola	65 bu	0.0	161	30	25	0	0	0	0.0	0	0	1
1	Barley (Malting)	Canola build	65 bu	0.0	161	85	35	0	0	0	0.0	0	0	1
2	Barley (Malting)	Canola	65 bu	0.0	160	30	25	0	0	0	0.5	0	0	1
2	Barley (Malting)	Canola build	65 bu	0.0	160	70	35	0	0	0	0.5	0	0	1
3	Barley (Malting)	Canola	65 bu	0.0	146	45	30	0	0	0	0.0	0	0	1
3	Barley (Malting)	Canola build	65 bu	0.0	146	85	140	0	0	0	0.0	0	0	1
4	Canola	Barley (Malting)	100 bu	0.0	93	45	20	0	0	0	0.0	1	0	1
4	Canola	Barley (Malting) (Bld)	100 bu	0.0	93	85	35	0	0	0	0.0	1	0	1

Soil scanners and probes use spectroscopy (absorption and emission of light) to provide automatic in-field analysis. Experienced agronomists recommend caution as these tools are expected to provide a high level of inference based on a relatively quick scan. Labs use techniques refined over decades to identify nutrient content at parts per million. If you choose to use this new technology, establish benchmark samples using your previous lab, to ensure analytical consistency and repeatability. Perhaps start with a few fields, then expand your testing once you are comfortable with the results and have established a reliable trend.

Original article published by Canola Council of Canada
<https://www.canolacouncil.org/canola-watch/fundamentals/soil-sampling/#:~:text=Fall%20timing%20for%20next%20year's%20planning.&text=If%20farms%20plan%20to%20band,probes%20can%20extract%20good%20cores.>





Watershed Resiliency and Restoration Program

Funding Available



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Treating cattle with a dart gun: when is it the right call?

by Dr. Roy Lewis

Dart guns, also known as remote delivery devices, are becoming commonly used in cow-calf operations.

Capture guns have also been used by veterinarians to capture escaped stock in areas where there are no collection corrals. We used to call this “going on safari.” Wildlife officers use these same capture guns with potent drugs to catch, relocate or collar wildlife.

In all these situations, there is minimal stress on the animal or producer.

Let’s go over the advantages and disadvantages of dart guns for treating cattle. This primarily pertains to cattle on large pastures where the ability to restrain and examine an animal is limited. Strong, elusive or fractious bulls may also require use of these devices.

This saves a lot of grief and time but we also don’t want to over-treat, and that is easy to do with these devices.

Today’s modern dart guns are rifles and handguns that shoot lightweight darts that can be loaded easily and are very accurate. The system most commonly used on livestock is the pneudart, in which darts are disposable.

Many come equipped with scope sites so if you’re close enough, it’s rare to miss the animal, even if you’re inexperienced, but be sure to do a bit of practice first.

Different sized darts are available, up to 10 cc, so you don’t need to worry about giving too much in one treatment site. These darts accurately deliver product 20 to 30 metres away. Wind must be taken into account when firing and try to retrieve spent darts from the ground.

The greatest issue isn’t the accuracy or efficacy of dart guns. It’s whether the diagnosis can be made properly from a distance. There is no close examination, and identification of the animal may be difficult.

Another issue is whether the delivery device puts the product where it needs to go from a Verified Beef Production standpoint. Can we deliver the proper dosage? With current darts with needles, I would say the answer to that is mostly



Modern dart guns can save producers labour and cattle stress - if they're used properly. Photo: Screen Capture/BCRC

yes. Practice with dart guns and use them only when other methods are impossible or impractical.

If you are going to use products and especially prescriptions in these devices, your veterinarian should work out protocols for the specific conditions in which you can treat with a dart gun. Many of today’s modern medicines have low dosages, long lasting capabilities and most are approved subcutaneously, meeting the requirements for remote delivery devices.

The darts can also be used with shorter needles, making it more likely most of the product is delivered subcutaneously. Shooting in the neck or shoulder area of mature animals is a decent target. Take into account whether darting a calf, yearling, cow or bull, because skin thickness is very different between these groups.

Be ever cognizant of jugular vein location. Some products, if given intravenously, can cause a severe allergic reaction. Always have epinephrine on hand when antibiotics or anything else that is injected.

I’ve seen animals limp for days after being hit on the shoulder, when the shoulder blade has been hit. If possible, never dart cattle on the run.

The Beef Cattle Research Council has excellent materials on the use of dart guns, their advantages and disadvantages, plus safety practices. There is also an excellent video on dart gun use, as well and other training videos such as the 911 calf videos. All are available at beefresearch.ca.

From the rancher viewpoint, dart guns offer easy and timely

treatments. There are significant labour savings and minimal stress on cattle that are darted. If the right treatment is given even one day or even several hours earlier than it would be otherwise, treatment response is improved.

Fewer treatments may be necessary and it can be much less stressful than roping and stretching the cattle out in order to treat. Work with your veterinarian on standard operating procedures for common pasture conditions.

Veterinarians may worry that some cattle are treated unnecessarily because a wrong diagnosis can be made when looking from a distance. There can also be over-treatment or product not delivered where it should be. These issues deserve consideration.

Like any treatment, it's important to identify the animal for your records and to manage withdrawal times. Legible ear tags and binoculars will help. Try to retrieve all used darts. They will usually fall out after the animal takes a few steps.

In summary, there are many things to consider before pulling out the dart gun but it is a good tool in remote and large pastures, or pastures with no handling facilities or with fractious animals.

Several veterinary clinics and farm supply stores in Western Canada carry the devices and proper darts. Use them with care, don't over-use, and follow the rules.

Originally published in the Manitoba Co-operator on August 30, 2024. The original publication can be found here:

<https://www.manitobacooperator.ca/livestock/treating-cattle-with-a-dart-gun-when-is-it-the-right-call/>



Follow-up resources:

Remote Drug Delivery Devices: What You Need to Know
<https://www.beefresearch.ca/blog/remote-drug-delivery-devices-what-you-need-to-know/>

Understanding the Five W's of Cattle Injections: Who, What, When, Where & Why
<https://www.beefresearch.ca/blog/five-ws-of-beef-cattle-injections/>

Remote delivery of antimicrobials should be a last resort
<https://www.producer.com/livestock/remote-delivery-of-antimicrobials-should-be-a-last-resort/>

Remote Drug Delivery
<https://www.beefresearch.ca/producers/remote-drug-delivery/>

Ropes, Chutes or Darts? How to Safely Treat Sick Cattle on Pasture
<https://www.beefresearch.ca/blog/how-to-safely-treat-sick-cattle-on-pasture/>

An advertisement for LARA Feed Testing. The top half features a photograph of two cows (one brown, one black) grazing in a field. A yellow circular graphic with the text "FEED TESTING" is overlaid on the right. The bottom half has a green background with white text. It states: "LARA offers two (2) free feed tests per year to all active producers in the MD of Bonnyville, Smoky Lake County, County of St. Paul." Below this, there are two bullet points: "• Silage, haylage, greenfeed, hay, grain, pellets, protein supplements." and "• Complete forage package including all macro and micro minerals." Further down, it lists additional costs: "• Additional feed tests are \$40.00/test", "• Nitrates is an additional \$10.00/test", and "• Toxins or other tests are an additional \$10.00/test". At the bottom, it says "Hay probes are available at the Smoky Lake County Office and the LARA office in Fort Kent." The footer is yellow and contains a "CONTACT US" button, a phone icon, and the text "(780) 826-7260" and "www.laraonline.ca".



LAKELAND AGRICULTURAL RESEARCH ASSOCIATION PRESENTS

Cowbytes

RATION BALANCING WORKSHOPS

OCTOBER 29, 2024
SMOKY LAKE UKRAINIAN NATIONAL HALL

NOVEMBER 14, 2024
FORT KENT COMMUNITY HALL

What is Cowbytes?
CowBytes ration-balancing software allows Canadian beef cattle producers to formulate their own feed rations. Producers can input various combinations of feed and byproducts at different prices to reduce feed costs while meeting animal production targets.

Bring your laptop and join us for a day of hands-on training using Cowbytes. We will be going through step-by-step instructions for the computer based cattle ration tool.

Bring your feed and water test results to build a ration based on your own herd, feed and water!

If you do not have Cowbytes installed on your computer, please arrive at 9:00 am for assistance. Computers must have a Windows operating system to run Cowbytes. If you do not have a laptop, please let us know so we can try and provide one for the day.

LUNCH PROVIDED

Event Agenda
9:00 am - Doors open, coffee and registration.
10:00 am - Workshop begins.
12:00 pm - Lunch and networking
12:45 pm - Workshop resumes.
5:30 pm - Wrap-up and head home

Registration is required. Free for LARA members or \$10.00 for non-members*
First 8 registrations per workshop will receive a free copy of the CowBytes program on a USB drive!
Please note that registrants must attend to receive their free copy. Cowbytes has a \$40.00 value, comes on a USB drive and can be downloaded and utilized on multiple computers.
*members include all producers in the MD of Beaseleyville, County of St. Paul and Smoky Lake County

www.laraonline.ca/events
780-826-7260 | director@laraonline.ca

Smoky Lake County, LARA, BCRC, Sustainable Canadian Agricultural Partnership

On-Farm Efficiency Program

The On-Farm Efficiency Program (2024-2028) aims to support the adoption of innovative technology that optimizes farm efficiency, minimizes agricultural waste, advances the digitalization of an operation, and/or gathers information that will help the producer knowledgeably enhance their operation.

Funding List

Refer to the website for the most up-to-date Funding List at www.alberta.ca/on-farm-efficiency-program

Eligible items are organized into four Streams:

1. Smart Farm Technology
2. Energy Efficiency
3. Farm Security
4. Efficient Grain Handling

Funding (retroactive to April 1, 2023)

Grants will be funded at a cost-share rate of 50% and paid in one lump sum reimbursement after item(s) are determined to be eligible and approved.

Funding maximum per Applicant is \$150,000 over the duration of the Program (2024-2028). Funding minimum per application is \$500.



WATER QUALITY AND LIVESTOCK HEALTH

FACTSHEET 2024-01

LARA

Water accounts for 50-80% of an animal's weight and is involved in every physiological process. In cattle, feed intake is directly related to water intake.

Cattle can tolerate poor water quality better than humans. However, there are many factors that can impact water quality to a point where cattle are affected.

Poor water quality can directly impact growth, lactation and reproduction, leading to significant economic losses for producers.

MAJOR FACTORS IMPACTING WATER QUALITY



Sulphates (>1000 ppm)

- Less than 1000 ppm is optimum.
- Risk increases with hot weather due to evaporative losses and increased water intake.
- **Ties up copper leading to copper deficiency.**
- Exacerbated by high sulphate feeds including canola, kochia, Canada thistle and pigweed.



Nitrates (>1000 ppm)

- Less than 1000 ppm is optimum.
- Converted to nitrites by bacteria in the rumen.
- Exacerbated by high nitrates in feed sources, including drought or freezing stresses forages, forages from fields with high nitrogen fertilizer rates and weeds known to contain high nitrates such as pigweed.



Salinity (>7000 ppm)

- Less than 7000 ppm is optimum.
- Measured as the concentration of dissolved salts.
- Can cause a refusal of water source followed by times of high consumption leading to illness.

CAN I DILUTE POOR QUALITY WATER?

Following analysis of water samples, dilution can be an effective method of managing poor quality water if high quality water is available for the dilution. This can be a costly method but effective if no other water sources are available.



Do not try to dilute water with blue-green algae present!



Surface water sources should be tested for Total Dissolved Solids (TDS) once per week if water quality is a significant concern.

WHY SHOULD I BE CONCERNED ABOUT COPPER DEFICIENCY?

Copper is essential in reproductive performance, calf growth and health and immune system functionality. Due to antagonists in water, such as sulphates, copper deficiency can become more of a concern.

Signs of copper deficiency:

- Impaired immune system (increased parasite burden)
- Lameness
- Unthriftiness and stunted growth
- Loss of color/bleaching of hair coat



WWW.LARAONLINE.CA

FACTSHEET 2024-01

#1

LEADING FACTOR IN HERD FERTILITY ISSUES IS BODY CONDITION

Poor water quality can lead to reduced feed and mineral intake leading to reduced weight gain or even condition loss.

Cows with a body condition score (BCS) of less than 2 are 3x more likely to be open.

Poor water quality can lead to a 30% increase in open cows.

Dr. Cheryl Waldner, Western College of Veterinary Medicine

CONSIDERATIONS WHEN SAMPLING YOUR LIVESTOCK WATER SOURCES**Ensure sample is obtained in a clean bottle**

- Can be a lab provided container, glass jar or well cleaned and dried used pop or water bottle.

**Collect a representative sample**

- Samples need to be representative of what cattle are drinking.
- May need to reach out 4-5 feet into a dugout with a retractable pole to obtain the sample.

**Refrigerate your sample**

- Ideally, samples should be refrigerated and shipped in a cooler to maintain sample temperature.
- Particularly important for samples assessing bacterial components. Check with your lab of choice for delivery times.



Portable hand-held Electrical Conductivity (EC) and Total Dissolved Solids (TDS) meters can be purchased for home use and are one of the most cost effective methods of obtaining a quick picture of water quality.

If readings are high, follow-up water samples can be sent for laboratory analysis.

UNDERSTANDING TOTAL DISSOLVED SOLIDS (TDS) AND LIVESTOCK HEALTH

Total Dissolved Solids (TDS) are the amount of organic and inorganic materials, such as salts and minerals, dissolved in a specified volume of water.

1000 - 3,000 ppm TDS is considered satisfactory for all classes of livestock.

3,000 - 5,000 ppm TDS may cause temporary diarrhea, avoid use in pregnant and lactating cattle.

5,000 - 7,000 ppm TDS avoid use for pregnant and/or lactating cows, reduced animal performance and diarrhea.

7,000 - 10,000 ppm TDS avoid use entirely if possible.

FOLLOW-UP RESOURCES

[Economics of Water Systems Calculator](#)

[Impacts of Body Condition on Cow Productivity and Profitability](#)



[Test Stock Water & Reduce Worry](#)

[Livestock and Water Quality](#)



PRODUCTION OF THIS FACTSHEET WAS MADE POSSIBLE BY:



Is Your Soil Copper Deficient?

by Momna Farzand, LARA

Copper (Cu) is an essential micronutrient for plants which is only required in trace amounts but plays significant roles in several physiological and metabolic processes including photosynthesis, protein synthesis, lignification and water regulation. Research has now identified that about 30% of agricultural soils have a low amount of Cu available to plants in Alberta. Therefore, Cu deficiency has become a major constraint for crop productivity in Alberta and cereals are most affected. Alfalfa and canola are relatively less susceptible to Cu deficiency. Among all cereal crops, wheat is the most sensitive to Cu deficiency followed by barley, oats, triticale and rye. Growers who aim to achieve high yield and quality targets for cereal crops should pay close attention to soil available Cu level depending on their farm's geography. Black and Grey-Black transition soils across the prairies are more susceptible to Cu deficiency. Cu deficiency may be expected in sandy or light loam soils with a relatively high level of organic matter (i.e. greater than six per cent). Prolonged phosphate fertilization or heavy manure application has been considered as a cause of Cu deficiency on these soils. Also, soils with a high concentration of manganese or heavily limed soils with high pH levels can become deficient in Cu.

Visual deficiency symptoms in cereal crops include leaf wilting and curling at tillering stage, yellowing of younger leaves, pig tailing or whip tailing of upper leaves, excessive tillering, stunted growth, thin or shriveled kernels, head melanosis and aborted heads. These symptoms occur in irregular patches on Cu deficient soils. Wheat grown on Cu deficient field often have high protein levels. The Cu deficient zones result in delayed crop maturity of few days to weeks



compared to better sections of the field. These Cu deficient zones may also cause severe lodging during wet years when plant roots are shallow (i.e. in the top six inches of soil). Lodging caused by Cu deficiency is not common during dry years since cereal roots can penetrate deep into the soil lower layers where there is adequate Cu. Low Cu soil levels are also associated with increased susceptibility and appearance of ergot in both wheat and barley.

The diethylenetriaminepentaacetic acid (DTPA) extractable soil test method is a good diagnostic tool to determine whether Cu is responsible for poor crop production in your field. Soil testing should be done at regular intervals to make sure soil has all adequate nutrients, including Cu to meet the requirement of crops. The general recommendation is to collect soil samples from a depth of 0-6 and 6-12 inches from different locations of the field for laboratory analysis. Surface soil samples (0 to 6 and 6-12") must consist of a composite of



a few samples taken from both the affected area and an adjacent most productive area for direct comparison. Black and Grey Wooded soil areas in Alberta can be considered deficient in Cu if soil test reports show less than 1.0 parts per million (ppm) of available Cu.

If deficiency is diagnosed, growers should decide the type and correct amount of Cu fertilization to avoid any yield and quality losses in cereal crops. Copper sulphate (CuSO_4) is generally the least expensive source of Cu. It contains 25% actual Cu and should surface broadcast followed by incorporation into soil at rates between three to eight lb Cu/ac. The effect of a single soil application can last for up to 10-15 years. When deficiency is diagnosed during a growing season, foliar application at tillering to flag leaf growth stages at rates between 0.2 to 0.3 lb Cu/ac can be used but is only effective for that season.

For more information, please visit Government of Alberta website: <https://www.alberta.ca/micronutrient-requirements-of-crops>.




Agriculture Drone SCHOOL

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Alyssa Krawchuk
Executive Director
director@laraonline.ca
(780) 826-1130

Momna Farzand
Cropping Agrologist
cropping@laraonline.ca
(780) 812-1037

Dustin Roth
Environmental Farm Plans
technician@laraonline.ca
(780) 812-1036

Lance Ouellette
Research Agrologist
lance@laraonline.ca
(780) 812-1048

Angelica Ouellette
Research Scientist
angelica@laraonline.ca
(780) 812-1392

Kristy Tetreau
Environment & Communications
kristy@laraonline.ca
(780) 573-6076

Box 7068
Bonnyville, AB
T9N 2H4

Phone: (780) 826-7260
Fax: (780) 826-7099

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Josh Crick (ASB Alt)

County of St. Paul

Patrick Elsen
Phil Amyotte
Louis Dechaine (ASB Rep)
Ross Krekoski (ASB Alt)

Smoky Lake County

Jamie Shapka
Amanda Fischer
Dan Gawalko (ASB Rep)
Jered Serben (ASB Alt)

Jay Cory (*LFA Rep*)

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