

A&L Canada Laboratories Inc.

# A STEP BEYOND TRADITIONAL LAB ANALYSIS

## JANUARY 2021 NEWSLETTER

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### KEY TRENDS FROM 2020 SOIL AND PLANT TISSUE SAMPLES

Based on the test results generated by A&L Canada Laboratories in 2020, there are some key trends to be observed. These soil and plant tissue trends are from aggregated data of samples analyzed from the respective regions and based on nutrient ranges from A&L field research:

## Key Trends from 2020 Soil and Plant Tissue Samples

### EASTERN CANADA

Soil Analysis Results	<ul style="list-style-type: none"> <li>• 43% of samples show very low / low Phosphorous levels</li> <li>• 73% of samples show very low / low Sulphur levels</li> <li>• 55% of samples show very low / low Boron levels</li> </ul>
Plant Tissue Analysis Results	<ul style="list-style-type: none"> <li>• 38% of tissue samples show low / deficient Phosphorus levels</li> <li>• 41% of tissue samples show low / deficient Sulphur levels</li> <li>• 42% of tissue samples show low / deficient Boron levels</li> </ul>

### WESTERN CANADA

Soil Analysis Results	<ul style="list-style-type: none"> <li>• 66% of samples show very low / low Phosphorous levels</li> <li>• 78% of samples show very low / low Sulphur levels</li> <li>• 37% of samples show very low / low Boron levels</li> <li>• 55% of samples show very low / low Zinc levels</li> </ul>
Plant Tissue Analysis Results	<ul style="list-style-type: none"> <li>• 39% of tissue samples show low / deficient Boron levels</li> </ul>

### NORTHERN UNITED STATES

Soil Analysis Results	<ul style="list-style-type: none"> <li>• 75% of samples show very low / low Sulphur levels</li> <li>• 84% of samples show very low / low Boron levels</li> <li>• 38% of samples show low / very low Phosphorus levels</li> </ul>
Plant Tissue Analysis Results	<ul style="list-style-type: none"> <li>• 46% of tissue samples show low / deficient Boron levels</li> <li>• 62% of tissue samples show low / deficient Sulphur levels</li> <li>• 53% of tissue samples show low / deficient Phosphorus levels</li> <li>• 39% of tissue samples show low / deficient Nitrogen levels</li> <li>• 36% of tissue samples show low / deficient Manganese levels</li> </ul>

Clearly, some key nutrient deficiencies are persisting which can be yield limiting. It is a good idea to go beyond the Basic test and look at some key micronutrients. A&L Canada Laboratories advises clients to conduct a complete soil and plant tissue analysis whenever possible. Given the time and expense involved in securing a sample, it is best to conduct a full analysis so both macro and micro-nutrient levels are confirmed, and deficiencies addressed to achieve optimal productivity.

A&L has a wide range of analytical packages available and outlined on our website:

<https://www.alcanada.com/content/solutions/soil-analysis>

SOIL HEALTH

# VITELLUS BIO SOIL HEALTH TEST AVAILABLE

*A next generation soil test quantifies soil microbial populations which contribute to soil health and improved crop productivity*

VitTellus Bio<sup>SM</sup> is a new analysis which complements the VitTellus<sup>®</sup> Soil Health test, a diagnostic used to make more informed decisions on application of nutrients, managing and improving soil health. By digging deeper into the physical and biological interactions we can make improved agronomic recommendations for higher yields and great profit. The VitTellus<sup>®</sup> Soil Health Test & VitTellus Bio<sup>SM</sup> are available to assist clients in this deeper assessment of soil parameters.

## TWO TESTS TOGETHER IN ONE NEW PACKAGE: VITELLUS BIO<sup>SM</sup> SOIL HEALTH PACKAGE

- A complete VitTellus<sup>®</sup> Soil Health Test and Report
- A complete VitTellus Bio<sup>SM</sup> Soil Health Report with analysis results and optimal ranges
- Technical support

# DIGGING DEEPER...



**SOIL HEALTH UPDATE**

Knowing the beneficial microbes in your soil is an important tool that could be used for increasing crop productivity

Researchers at A&L Canada Laboratories / A&L Biologicals have made a key advance in measuring the microbes in the rhizosphere

## NEXT-GENERATION SOIL HEALTH TESTS





SOIL HEALTH INDEX FOR DECISIONS



QUANTIFIES THE BENEFICIAL SOIL MICROBES

NEW


**The NEW VitTellus Bio<sup>SM</sup>** is a soil health test which quantifies the levels of specific functional groups of microbes in the soil that are associated with improved soil health & crop yield

- Provides more usable soil biological information, compared to other biologicals tests currently available
- Provides an interpretation with soil chemistry to get complete soil health information
- Can be used to create biological inclusive soil health / environmental farm plan
- Results correlated to soil chemistry parameters in the VitTellus<sup>®</sup> Soil Health Test
- Tested in bulk soil -- the same soil samples are used in parallel with the VitTellus<sup>®</sup> Soil Health Test
- Call A&L Labs for sampling details

Get a deeper assessment of soil health parameters, contact us:



A&L Canada Laboratories Inc.  
1-855-837-8347 • [alcanadalabs@alcanada.com](mailto:alcanadalabs@alcanada.com)  
[www.alcanada.com](http://www.alcanada.com) • [www.albiologicals.com](http://www.albiologicals.com) • [www.vitellus.com](http://www.vitellus.com)



Food and Agriculture Organization of the United Nations

# Soil biodiversity: the hidden world beneath our feet

**MEGADIVERSITY**  
Toads, moles, beavers, rabbits and badgers are the principal agents of soil turnover and distribution.

**MESODIVERSITY**  
Earthworms, termites, ants, millipedes and woodlice help with soil drainage and aeration.

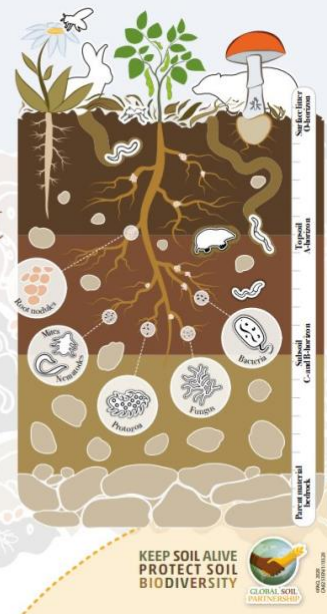
**MICRODIVERSITY**  
Microscopic invertebrates such as collembolans, diptera, protozoans, nematodes, mites and tardigrades are biological regulators of decomposition.

**ULTRADIVERSITY**  
Bacteria, protozoans, fungi and nematodes are the smallest and most numerous organisms in the soil. That are responsible of biogeochemical processes.


Plants nurture a whole world of creatures in the soil, that in return feed and protect the plants.

This diverse community of living organisms keeps the soil healthy and fertile.





This vast world constitutes soil biodiversity and determines the main biogeochemical processes that make **life possible on Earth.**



KEEP SOIL ALIVE PROTECT SOIL BIODIVERSITY



Thanks to the financial support of:

World Soil Day

The World Soil Day initiated by the United Nations Food and Agriculture Organization (FAO) exemplifies the awareness and is celebrated worldwide every year on December 5<sup>th</sup>. The 2020 World Soil Day campaign was under the slogan "Keep soil alive, protect soil biodiversity" which is an absolute prerequisite for ensuring the sustainability of food production without compromising soil integrity for the growing population and future generations. To achieve these goals, it is essential to give targeted effort in obtaining profound understanding of soil biological processes, the role of soil biodiversity in maintaining soil health and functions as well as the effect of soil organisms on agricultural production and ecosystem health.

# A&L SOIL REPORT INFOGRAPHIC

## UNDERSTANDING YOUR SOIL TEST REPORT

A & L Canada Laboratories Inc.



C19123-10186

To: **Client Information**

For: **Sample Report**

Field: **SW Ontario**



### SOIL TEST REPORT

Reported Date: May 7, 2019 Printed Date: Aug 19, 2019

Sample Number	Lab Number	Organic Matter	Phosphorus - P ppm		Potassium K ppm	Magnesium Mg ppm	Calcium Ca ppm	Sodium Na ppm	pH Buffer		CEC meq/100g	Percent Base Saturations				
			Bicarb	Bray-P1					% K	% Mg		% Ca	% H	% Na		
1	29530	2.1	15 L	25 L	86 M	161 H	830 M	9 L	6.8	6.9	6.9	3.2	19.4	59.9	17.1	0.6
2	29531	2.4	15 L	38 L	121 M	110 M	550VL	7 L	6.4	6.8	6.4	4.9	14.3	43.0	37.3	0.5
3	29532	2.3	13 VL	25 L	153 M	153 H	930 M	10 L	6.8	6.9	7.5	5.2	16.9	61.6	15.7	0.6
4	29533	2.2	15 L	21 VL	122 M	147 H	1130 M	10 L	7.2		7.6	4.1	16.2	74.6	4.5	0.6

Sample Number	Sulfur S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Soluble Salts msc/m	Saturation %P	Aluminum Al ppm	Saturation %Al	Nitrate Nitrogen NO <sub>3</sub> -N ppm	K/Mg Ratio	ENR	Field ID
2	13 M	2.2 L	7 L	57 VH	0.3 L	0.1 VL		4 VL	1383	1.9 G		0.34	36	
3	10 VL	2.3 L	20 M	77 VH	0.7 M	0.1 VL		3 VL	1019	0.4 G		0.31	35	
4	9 VL	3.5 L	42 H	72 VH	0.9 M	0.1 VL		4 VL	730	0.1 G		0.25	34	

OE: VL=VERY LOW L=LOW M=MEDIUM H=HIGH VH=VERY HIGH G=GOOD MA=MARGINAL MT=MODERATE PHYTO-TOXIC T=PHYTO-TOXIC ST=SEVERE PHYTO-TOXIC

#### Organic Matter

- Provides structure to your soil
- Indication of moisture holding capacity
- Presented in %
- Measurement of plant and animal residue in the soil
- Acts as a reserve for many essential nutrients, especially nitrogen

#### Cation Exchange Capacity [CEC]

- Measures the soils ability to hold nutrients such as K, Ca, Mg and other cations like H, Na
- Reported as meq/100g
- The lower the CEC, the sandier the soil
- CEC is a very important factor to consider when it comes to nutrient recommendations

#### Balance Cation Ratios

Desirable Ranges for Cations

Cation	Range
Calcium	65% - 80%
Magnesium	10% - 20%
Potassium	3% - 7%
Hydrogen	5% - 15%
Sodium	0% - 1%
Aluminum	Less than 1%

#### Calcium

- Enhances proper root development
- Reduces soil acidity, decreasing the risk of toxicity from certain micronutrients
- Increases the microbial activity
- Important in cell structure
- % Ca
- Optimum levels range from 60-80%
- Can be used as a target for lime application, as opposed to pH

#### Phosphorus

- Main function is to provide energy to the crop important for: root development cell formation, seed formation, crop maturity
- Phosphorous uptake can depend on other nutrients such as magnesium, zinc & other factors such as soil pH and temperature
- Reported in ppm as P, not P2O5

#### % Saturation of Phosphorous

- Takes into account high aluminum levels

#### % Phosphorus

	< 9	10-13	14-17	>18
VERY LOW	0-4	0-3	0-2	0-1
LOW	5-9	4-6	3-4	2-3
MEDIUM	9-12	7-9	5-6	4-5
GOOD	12-15	10-12	7-9	6-7
HIGH	16+	13+	10+	8+

#### Cation Exchange Capacity - CEC

	< 9	10-13	14-17	>18
VERY LOW	0-4	0-3	0-2	0-1
LOW	5-9	4-6	3-4	2-3
MEDIUM	9-12	7-9	5-6	4-5
GOOD	12-15	10-12	7-9	6-7
HIGH	16+	13+	10+	8+

#### ENR

- Bacterial activity releases some of the nitrogen stored in Organic Matter
- ENR is an estimate of the amount of nitrogen that will be released over the season

#### Sodium

- Reported in ppm and % Na
- High exchangeable sodium may prevent the growth of plants

#### Sulfur

- Measure sulfate sulfur, which is readily available and preferred for plant uptake
- Has become more important to monitor due to decreased acid rain
- More susceptible to leaching in sandy soil

#### Potassium

- Important for photosynthesis, respiration, water metabolism, and protein synthesis
- Plant avail. decreases as pH decreases
- Reported in ppm as K, not K2O
- Measure of available potassium
- Optimum level ranges from 90-150 ppm

#### Cation Saturation, or %K

- Optimum level is 2-5%

#### Magnesium

- Completes the formation of chlorophyll
- Regulates crop maturity
- Activator & cmpt. of many plant enzymes
- Important in the uptake of phosphorous
- Reported in ppm
- Also reported as %Mg
- Optimum levels range from 10-20%

#### K/Mg Ratio

- A&L research has shown, in some cases, correlation with yield and crop performance
- Increased nutrient efficiency

K/MG Ratio	VERY LOW	LOW	MEDIUM	OPTIMUM	HIGH	VERY HIGH	EXCESSIVE
	<0.08	0.08 - 0.15	0.15 - 0.25	0.25 - 0.35	0.35 - 0.50	0.50 - 0.80	0.80 +

#### pH

Good soil pH key to good yield & quality

- Increased uptake of plant nutrients, development of root nodules, water uptake, weed control
- Most plant nutrients have reduced availability below pH 6
- Potential for nutrient toxicity at low pH
- pH measures active soil acidity or alkalinity
- Buffer pH is used to determine the amount of lime to apply
- Buffer pH is more stable than pH

#### MicroNutrients

- Zinc, manganese, iron, copper, boron

French Version: <https://www.alonline.alcanada.com/understanding-your-soil-test-french>  
 Visit A&L's SOIL information page on the A&L ONLINE site: <http://www.alonline.alcanada.com/soil>

## A&amp;L WORKSHOPS VIA ZOOM – FEB/MARCH 2021

# Soil Fertility Workshops Online for 2021

Join us in February and March as A&L Canada Laboratories moves its winter Soil Fertility Workshops online with a new format – weekly sessions:

- Each webinar will be held on Thursday and will be 1 ½ hours long, beginning at 1:30 pm
- Greg Patterson, CCA and Founder of A&L, will be leading the Workshops
- CEUs will be offered in Crop Management for Certified Crop Advisers
- Registration is required with a nominal \$40 CAD fee for this event
- For full workshop descriptions [click here to learn more](#)

## Register for the Winter 2021 A&L Soil Fertility Workshops on Zoom:

- Week #1: Feb 4<sup>th</sup> **pH, CEC, Optimum Nutrient Levels by Soil Type & Variable Rate Applications** | [Register on Zoom](#)
- Week #2: Feb 11<sup>th</sup> **Phosphorous and %P Interpretation** | [Register on Zoom](#)
- Week #3: Feb 18<sup>th</sup> **Potassium and K/Mg Ratio** | [Register on Zoom](#)
- Week #4: Feb 25<sup>th</sup> **BORON** | [Register on Zoom](#)
- Week #5: March 4<sup>th</sup> **Sulfur and the Micronutrients** | [Register on Zoom](#)
- Week #6: March 11<sup>th</sup> **Soil Health and Seed Endophytes** | [Register on Zoom](#)
- Week #7: March 18<sup>th</sup> **Plant Tissue Nutrient Analysis and Interpretation** | [Register on Zoom](#)

**Register Now! [www.alcanada.com](http://www.alcanada.com)**

**A&L Canada Laboratories Inc.**

## SOIL FERTILITY WORKSHOPS

Thursdays Feb 4 - Mar 25th  
New Topic Each Week  
1:30 - 3:00 pm EST  
Zoom Webinar

**Greg Patterson**  
CCA & Founder of A&L

CEU CREDITS AVAILABLE

QUESTIONS? Email [alcanadalabs@alcanada.com](mailto:alcanadalabs@alcanada.com)

## AGRONOMY CORNER: Top Liming Questions, Making Sense of Compost & Potting Soil Analysis

### Top Liming Questions

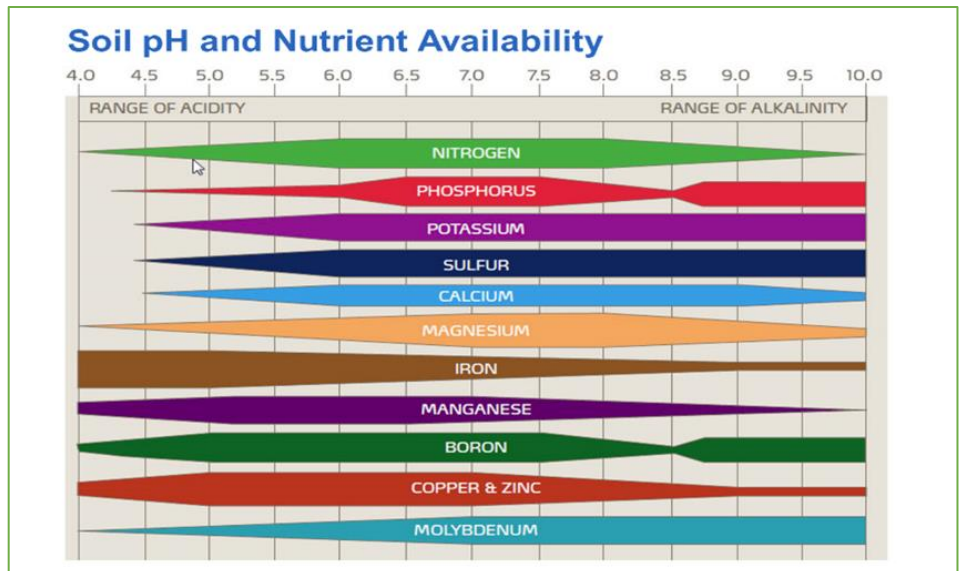
#### Why are lime recommendations based on the buffer pH (BpH)?

Lime recommendations are based on buffer pH unless the cation exchange capacity (CEC) of the soil is under 7 meq/100g. First, let us recall that soil acidity is attributed to the concentration of hydrogen ions present. The pH is a measurement of the concentration of the hydrogen ions in the soil solution, which are loosely bonded to the soil particles. The buffer pH is often referred to as a measurement of a soil's reserve acidity. This reserve acidity accounts for the hydrogen ions that are found within organic matter or tightly bound to soil particles. This causes the buffer pH to be a more stable value and a more accurate representation of a soil's acidity.

When the CEC of a soil falls below 7meq/100g, the soil pH is used for lime recommendations. This is due to a lack of buffering capacity in the soil. The low CEC depicts that the soil lacks organic matter and is likely a coarse sand, therefore there are nominal bonding sites for hydrogen ions. This lack of bonding sites causes the pH and buffer pH to be relatively similar and thereby the pH is adequate for determining the liming recommendations. It is important to note that in soils with CEC's below 7meq/100g the pH is very volatile and can be changed quickly by the addition of various amendments. Less is more in these soils and care should be taken when applying amendments.

#### Why is lime typically not recommended once a buffer pH of 6.9 is achieved?

Typically, lime is not required on a soil with a buffer pH greater than, or equal to 6.9. This is due to nutrient availability.



Once a buffer pH of 6.9 is achieved, any additional lime may cause a reduction in the availability of other nutrients. This can be seen in the image above.

#### Are there any exceptional instances where lime is required even though a buffer pH of 6.9 is indicated?

In certain circumstances, lime might be necessary when the base saturation of calcium falls below 70%. If this occurs, gypsum (calcium sulphate) or calcitic lime may be required to increase the base saturation of calcium. This need is attributed to crop nutrition as well as nutrient balances. Calcium plays a large role in the cell wall production of a plant and thus plant growth, yield and crop quality. Caution must be taken when using calcitic lime to prevent an increase of pH above desired values.

It is also important to note that, on occasion, lime is also required to reduce aluminum toxicity. In soils with low pH, aluminum is soluble and can be found in the ionic form of Al<sup>3+</sup>. This ion is highly toxic to plants and causes inhibited cell elongation in roots. By raising the soil pH, aluminum is less soluble and found in less toxic ionic forms. Gypsum can also reduce the effect of aluminum by raising

the calcium concentration in the soil. This allows for the formation of aluminum sulfate ions (AlSO<sub>4</sub><sup>+</sup>) which are less toxic than other aluminum ions.

**Should I use calcitic lime or dolomitic lime?**

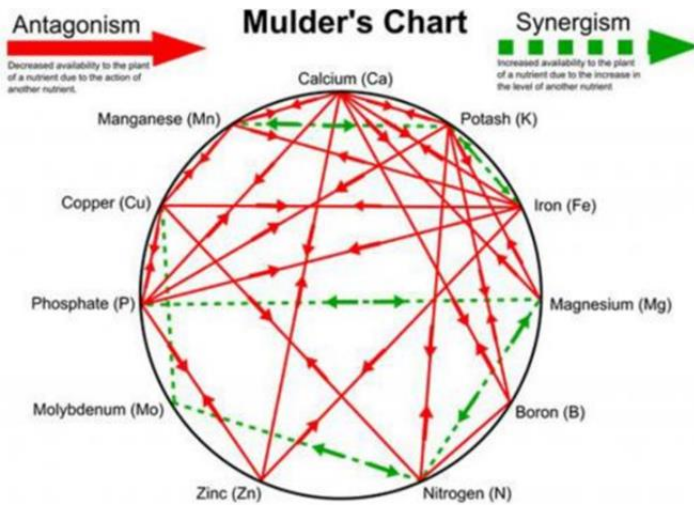
At 20% or greater base saturation of Magnesium (Mg), Calcitic lime is recommended. Once greater than 20% base saturation of Mg is exceeded, antagonism occurs with other elements as seen in the image to the right. Typically, growers relate high Mg soils to being “sticky” or “tight”. Calcitic lime and gypsum can also be applied to high Mg soils to displace the Mg and reduce detrimental effects.

**How much lime can be applied per year?**

A maximum of 3 tons per acre, per year, of lime is recommended. Over application of lime can cause a significant disruption in the soil. This could be due to antagonism of different elements, disrupting microbial populations, or increasing the activity of residual herbicides such as atrazine.

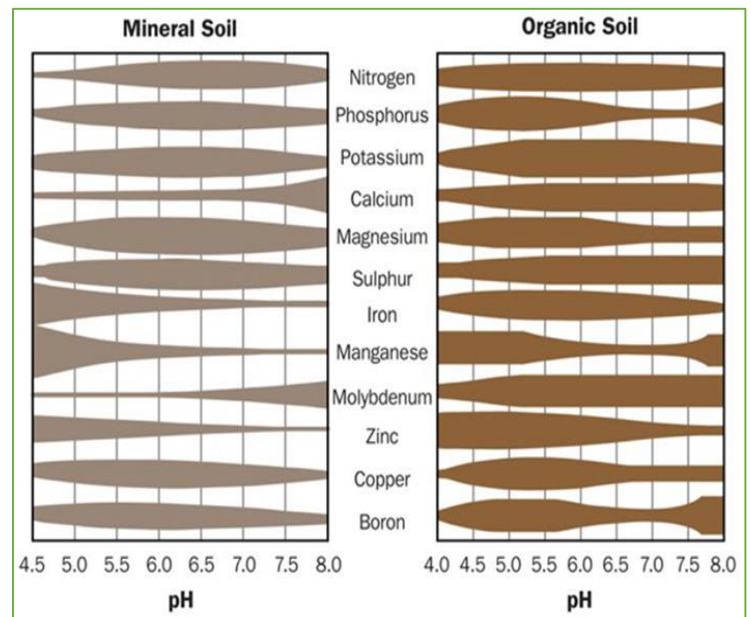
**Is there any difference between liming mineral soil and high organic matter (OM) soil?**

Liming high organic matter or muck soil, with an OM greater than 10%, is different than liming mineral soil. Liming high OM soil is only recommended once the buffer pH drops below 6.8 and application rates vary from that of a mineral soil. This can be attributed to high CECs in high OM soils along with different nutrient availabilities and toxicities. This can be seen in the image below. As with mineral soils, crop pH preferences should be consulted prior to amending the soil.



**Is all lime the same?**

All lime sources are not equal. They have various neutralizing potentials, elemental concentrations, particle sizes and agricultural (ag) indexes. Lime recommendations are based on an ag index value of 75 and a plow depth of 8”. Calculations can be made to adjust for different ag indexes. Growers should compare different lime sources based on the total neutralizing values, ag indexes and elemental concentrations. Liming rates can also be adjusted for liming depth. Liming results are best achieved when lime is immediately incorporated following application.



For more information on liming and calcium nutrition in plants please visit <https://www.alcanada.com/content/references/tech-bulletins> or do not hesitate to reach out

## Making Sense of Compost

Composting turns unwanted waste into a useful resource as a soil amendment

Composting is the controlled decomposition or decay of organic material like yard and kitchen waste, saw dust, wood chips, cardboard and paper. Compost contributes nutrients and beneficial life to the soil, as well as improves soil structure and moisture retention. Properly composted organics are free from pathogens and weeds partly because of high temperatures produced during the composting process. Compost can decrease dependence on chemical pesticides because it contains beneficial microorganisms that protect plants from diseases and pests.

Compost contains a full spectrum of essential nutrients for plant growth and releases its nutrients slowly. It supplies nitrogen, sulfur, phosphorus, boron and molybdenum. Depending on the composition of the compost, it can also supply lignans, proteins, cellulose and other carbohydrates, as well as oils, waxes and tannins. However, compost should not be simply thought of as a fertilizer. Compost is a growing media that can be used as an amendment to existing soil. It can aid in improving the soil physical properties along with the fertility of soil. Compost also provides soil aeration, promoting healthy root growth and oxygen for microbial life.

Compost contains humic acids that increase microbial activity. It may depress pathogenic fungi while at the same time stimulate the numbers of beneficial microbes in soils such as mycorrhizal fungi that aid in the uptake of nutrients. Humic acid also improves aggregate stability, helps make nutrients available for plant use, binds up heavy metals and neutralizes other phytotoxic elements. Compost and its contents also help buffer soil alkalinity and acidity.

Compost introduces and feeds a diverse population of life in the soil, including bacteria, insects, worms and more, which help support plant growth. The bacteria and fungi in compost can break down mulch and plant debris into plant available nutrients. Some soil bacteria also convert nitrogen from the air into the plant available form. Beneficial flora and fauna are abundant in compost supplemented soil. Their presence in the soil helps aggregation and aeration.

Compost is a helpful soil amendment with many beneficial aspects. When produced properly and graded for its ideal end use it is a valuable commodity. Determining its value based on its nutrient load is relatively easy when compared to fertilizer prices, however, other properties such as its microbial load and organic matter are difficult to put a value on.

## Potting Soil/Soilless Media Testing Guidelines

These days potting soils are not standard recipes. They include varying proportions of peat, coco coir, mineral soil, compost and manure. It is for this reason that A&L recommends testing your potting soil to determine its nutrient concentrations.

Potting soil should not be tested with the same methods as standard mineral soils. Mineral soils are typically made up of less than 10% organic matter (OM), whereas potting soils can contain significantly more than 10% OM. Due to this high OM content, the bulk density of potting soil is considerably less than that of a mineral soil. For

that reason, potting soils must be analyzed differently.

A&L Canada Laboratories offers a wide range of tests for potting soils, from a basic macronutrient package to complete micronutrient testing, as seen on the greenhouse media submittal form. The lab can perform both a mild acid extraction (S8) and a saturated paste extraction (S9). A mild acid extraction is typically recommended as it accurately depicts the nutrients available to the plant.



High OM in potting soils cause the nutrient and liming requirements to vary from mineral soils. Potting soils often contain a high concentration of nutrients but not in the right proportions for optimum plant uptake. With high nutrient concentrations, salts can become a critical issue. It is a good idea to test potting soils for soluble salts, also referred to as conductivity. This will help to identify the potential for salt damage or toxicity. Testing the carbon to nitrogen (C:N) ratio is also very important. Higher OM values contribute to high carbon quantities in the soil. With higher carbon levels, microbes use the available nitrogen to break down excess carbon which renders the nitrogen unavailable to plants. A&L recommends a C:N value between 12:1 and 22:1 for potting soils.

For growers looking to meet Health Canada regulations, A&L offers heavy metal and pesticide testing on potting soils. Additionally, A&L Canada Laboratories is capable of testing potting soils for soilborne pathogens such as Verticillium, Fusarium, Botrytis, Phytophthora, and Rhizoctonia.

If you have questions regarding our potting soil analysis, please view our website at [www.alcanada.com](http://www.alcanada.com) and do not hesitate to reach out to us at [alcanadalabs@alcanada.com](mailto:alcanadalabs@alcanada.com) or call 519-457-2575.

## WINTER SOIL SAMPLING FROM DEVERON



### Beat the Spring Soil Sampling Rush!

With winter upon us, frozen soils are traditionally thought of as being “too frozen to sample”, and thus, the thought of getting farms sampled is often pushed back until Springtime.

At Deveron, our equipment is designed, and proven, to efficiently sample all soil types...including solid frozen ground! Our carbide-tipped drill/auger systems on all of our soil sampling units are easily able to collect quality soil samples throughout the winter months.

Winter sampling is a great opportunity to get your soil sampling completed, with recommendations made, before Spring arrives!

... When your neighbor’s fields are being soil sampled in the spring sampling rush, you can already be spreading fertilizer and getting a head start on planting! Give it a try this winter!

Contact your A&L Business Development Representative today for more information!



## LATEST NEWS

### A&L Biological Inc.



### Rob Field Joins A&L Biologicals as Business Development Manager

Mr. Field will lead A&L Biological Inc.'s transformation from a "boutique" research house to a full commercial enterprise

Read the full article online: <https://www.albiologicals.com/post/rob-field-joins-a-l-biologicals-as-business-development-manager>

### A&L Biological Inc. moves first commercial products into the registration phase

- Cuc-Guard™ now submitted for control of Cucumber Green Mottle Mosaic Virus (CGMMV)
- Bio-Stimulant 'AL-BIO 7' submitted for management of transplant stress

Read the full article online: <http://www.albiologicals.com/post/a-l-biological-inc-moves-first-commercial-products-into-the-registration-phase>

#### CUC-GUARD INFOGRAPHIC

#### A New "Vaccine" to prevent the infection and spread of CGMMV

<p>1</p>  <p><b>CGMMV</b></p>	<p>2</p> <p><b>CUC-GUARD™</b> <i>Bio-Control</i></p>	<p>GREENHOUSE TRIALS - CUCUMBER</p>	
<p>1. Cucumber Green Mottle Mosaic Virus (CGMMV) is a plant disease that infects cucurbit crops - including watermelon, cucumber, melons, zucchini, pumpkin, squash, bitter melon, and bottle gourd.</p>	<p>2. Cuc-Guard was developed by the discovery platform at A&amp;L Biological Inc., a division of A&amp;L Canada Laboratories Inc., for the treatment of CGMMV. Cuc-Guard acts as a "vaccine" for target crops to prevent infection and spread.</p>	 <p>CGMMV infected cucumber fruit - Curling - Mosaic &amp; Soft</p>	 <p>After Cuc-Guard™ treatment</p>
<p>3</p> 	<p>4</p> <p><b>CUC-GUARD™</b></p> 	<p><b>A&amp;L Biological Inc.</b> www.albiologicals.com</p> 	
<p>3. Cuc-Guard has demonstrated efficacy in both small plot and large-scale greenhouse trials for control of Cucumber Green Mottle Mosaic Virus (CGMMV).</p> <p>4. Efficacy data indicates that when applied preventatively, Cuc-Guard™ provides control of the pathogen and improves both crop quality and yield.</p> <p>January 2021 - Cuc-Guard™ has moved into the registration phase of development &amp; is the first of several plant vaccine solutions to be developed from the discovery platform at A&amp;L Biological Inc.</p>			

## UPCOMING EVENTS

Check out the A&L ONLINE “Virtual” website where we are adding videos and other resources on the topics of SOIL, TISSUE, DISEASE and more! [www.alonline.alcanada.com](http://www.alonline.alcanada.com)



- **Ontario Agriculture Conference** **Jan 6 & 7th**

Southwest Ag Conference, Guelph and Eastern Ontario Crop Conferences are ‘Coming Together’ to present the Ontario Agricultural Conference

Details at [www.ontarioagconference.ca](http://www.ontarioagconference.ca)

- **Pacific Ag Show 2021 Virtual Edition** **Jan 28 – 30, 2021**  
[www.agricultureshow.net](http://www.agricultureshow.net)
- **A&L Soil Fertility Workshops Online for 2021** **Feb 4 – March 18<sup>th</sup>**  
New Format – Weekly Zoom Webinars – Thursdays @ 1:30 pm  
Learn more: <https://www.alcanada.com/content/news/index?nid=61>
- **Innovative Farmers Conference VIRTUAL** **Feb 16 – 18**  
[www.ifao.com](http://www.ifao.com)

- **Top Crop Summit Feb 23 & 24**  
<https://www.topcropmanager.com/virtual-events/top-crop-summit-day-1/>

- **Grain Farmers of Ontario Classic** **March 22 & 23**  
<https://gfo.ca/about/march-classic/>

**NOTE:** The Ontario Fruit and Vegetable Convention is postponed the annual gathering of horticultural fruit and vegetable growers until 2022. For 2021, OFVC is presenting the **OFVC 2021 Education Series** – Visit their website for more information [www.ofvc.ca](http://www.ofvc.ca)

## We are here to help!



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### Watch A&L agronomy videos on the go....

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#### Latest Videos:

<p>In Season Plant Analysis to Monitor Crop Performance...</p>	<p>Introduction to A&amp;L Labs Soil Health - VitTellus® Soil...</p>