



# SEPTEMBER 2020 NEWSLETTER

## A&L Canada Laboratories Inc.

### SEPTEMBER 2020 ISSUE:

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## New VitTellus Bio Soil Health Test Available

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



A&L Canada Laboratories Inc. announced in July the launch of **VitTellus Bio<sup>SM</sup>**, a new soil health test for the agriculture industry that quantifies soil microbial populations which support improved soil health and greater 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. Traditional soil tests measure the chemical properties of soil, and that is helpful. But soil is a living, dynamic and continually changing ecosystem requiring a more holistic approach to determining optimal and sustainable management practices. 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: VitTellus Bio<sup>SM</sup> Soil Health Package

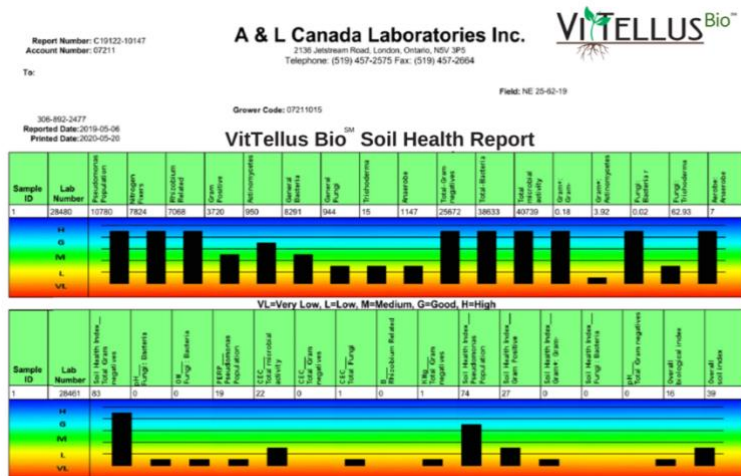
The VitTellus Bio<sup>SM</sup> Soil Health Package is an analytical package providing the VitTellus<sup>®</sup> Soil Health Test PLUS the new VitTellus Bio<sup>SM</sup> microbial test which quantifies the levels of functional soil microbes associated with improved soil health and crop yield. VitTellus Bio<sup>SM</sup> utilizes selective carbon sources to measure the concentration of specific functional microbial groups within a soil sample which research has shown have known beneficial functionality, ie. Nitrogen fixation. Optimal ranges of these functional microbes are provided and, along with the soil chemistry metrics, will allow you to implement farm management strategies to increase favorable soil microbe populations.



Information on the VitTellus<sup>®</sup> Soil Health Test & VitTellus Bio<sup>SM</sup>, can be found at [www.vittellus.com](http://www.vittellus.com)

#### The VitTellus Bio<sup>SM</sup> Soil Health Package Components:

- 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
- Online portal for access to reports
- Live expert customer support



*VitTellus Bio<sup>SM</sup> Soil Health is the next logical step in understanding soil health and the biological drivers of productivity. This analysis allows clients to understand their current soil microbial populations and take concrete actions to cultivate microbes which support healthier soils, stronger plants and greater returns for the farmer, and society.*

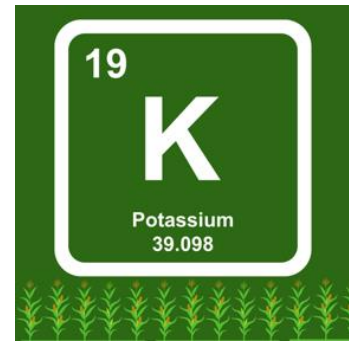
*This is a worthwhile, long view endeavor, we strongly encourage farmers to truly get to know their soils for their longstanding success.*

*We are proud of all the research and development work coming out of A&L Canada Laboratories and are committed and passionate about sharing our knowledge for the advancement of the industry.*



**Greg Patterson, CCA**  
Founder and CEO  
A&L Canada Laboratories Inc.

## AGRONOMY CORNER: POTASSIUM IN PLANTS



Potassium is absorbed by plants in larger amounts than any other mineral element except for Nitrogen.

In order for a plant to use nitrogen it must combine NO<sub>3</sub> with K<sup>+</sup> at the root surface for transport up the Xylem of the plant.

Potassium is the most abundant cation in the cytoplasm of the plant, and potassium salts are responsible for the osmotic potential of cells and tissues.

The high concentration of potassium in the cytoplasm and chloroplasts is responsible for maintaining the pH of the cell and tissue between 7 and 8. In potassium deficient plants if the pH drops below 7 many plant processes will stop. An example of this is that a cell pH of 6.7 nitrate reductase activity almost completely stops.

Other such activities that Potassium takes part in, in plant nutrition include over 60 enzyme systems. It is difficult to imagine a growth or reproduction process in plants that is not directly or indirectly impacted in a very significant way by K.

### POTASSIUM PLAYS THE FOLLOWING ROLES

Photosynthesis	Syntheses of amino acids and proteins	Carbohydrate synthesis and translocation	Lignin and Cellulose development	Disease and insect resistance	Root growth
<ul style="list-style-type: none"> <li>• Coloration of leafy vegetables (healthy green colour)</li> <li>• Uniformity of ripening</li> <li>• Growth Rate</li> </ul>	<ul style="list-style-type: none"> <li>• Syntheses of amino acids and proteins</li> <li>• Food quality</li> </ul>	<ul style="list-style-type: none"> <li>• Bud development</li> <li>• Sugar content</li> <li>• Enhanced flavour</li> </ul>	<ul style="list-style-type: none"> <li>• Firm stems and stalks</li> <li>• Resistance to bruising and physical breakdown</li> <li>• Longer shelf life</li> </ul>	<ul style="list-style-type: none"> <li>• Thicker epidermal layer</li> <li>• Fewer Blemishes</li> <li>• Higher market grade</li> <li>• Less culls and waste</li> <li>• Better insect tolerance</li> <li>• Better frost protection</li> </ul>	<ul style="list-style-type: none"> <li>• More effective utilization of soil moisture</li> <li>• Improved nutrient uptake</li> <li>• Greater vigor</li> </ul>

### SOIL POTASSIUM AVAILABILITY

Potassium levels in plants for optimal growth are between 2 and 3 % of the dry weight. When K<sup>+</sup> is limited to the plant life processes from Photosynthesis to moisture regulation of the plant are affected.

Soil potassium levels are very much a function of the availability and uptake by the plant. In soils only a fraction of the potassium is available to the plant for uptake. In fact, many soils containing large amounts of total potassium will respond to additions of potassium fertilizer due to its availability.

**SOIL POTASSIUM EXISTS IN 3 FORMS:**

**1) RELATIVELY UNAVAILABLE, 2) SLOWLY AVAILABLE, and 3) READILY AVAILABLE**

In soils the unavailable form is that which is not available to plants and is contained in un-weathered or slightly weathered minerals. This makes up or accounts for 90 – 98% of the total potassium in soils.

Slowly, available potassium is gradually taken up or fixed depending on the soil type and Equilibria of the soil. This portion of the soil potassium accounts for 1 – 10 % of the soil potassium.

Readily available potassium is a combination of water soluble and exchangeable potassium. In some soils reversion back to slowly available can occur in the process of fixation. This accounts for only a small portion of the total soil potassium at .1 – 2 percent depending on the soil type.

In soils, potassium never comes to equilibrium because of the removal by plants, leaching and the addition potassium fertilizers. A constant conversion of potassium from the unavailable forms to the readily available forms takes place, with some conversion from readily available back to the slowly available with heavy applications or fertilizers in some soils.

The readily available form of potassium that is measured in laboratory procedure is the portion that is available to plants and is found in soil solution and on the exchangeable fraction of the soil particle.

An increase in the concentration of K+ ions in solution when fertilizer is added to the soil will increase the amount of K+ available to the plant contained on the exchangeable portion of the soil. In the case of low K+ levels in the soil in the available form an application of fertilizer K+ will increase the conversion of K+ to the slowly available form (fixation). In these soils the addition of K+ close to the growing season will reduce the amount of K+ that will be converted to the slowly available form or fixed.

As soil equilibria is approached and the readily available pool of K+ is increased or reaches saturation the amount of K+ fixed is reduced. However, this is very dependent on soil type and other conditions that effect the fixation of K+.

**POTASSIUM AND PHOTOSYNTHESIS**

Potassium plays a major role in the process of Photosynthesis. A plant that has an optimum level of K+ in its cytoplasm will be a more efficient in photosynthesis.

LEAF POTASSIUM (mg/g dry weight)	PHOTOSYNTHESIS	PHOTORESPIRATION
12.8	11.9	4.0
19.8	21.7	5.9
38.4	34.0	9.0
<i>From this chart as you can see as we increase the level of K in the Leaf, the rate of Photosynthesis also increases.</i>		

**WATER REGULATION IN THE PLANT**

As potassium is responsible for regulating the salt concentration of the cell and cytoplasm it plays a major role in the water retention and uptake of the plant. Potassium plays a major role in the turgor pressure and changes in turgor pressure in the guard cells during stomatal movement.

A typical symptom of potassium deficiency is the loss of turgor or the wilting of plants in prolonged dry weather. Therefore, a plant that has adequate K<sup>+</sup> nutrition will be able to withstand longer periods of low soil moisture.

This high requirement for K<sup>+</sup> in the leaf tissue protects the plant during other adverse weather conditions such as frost. High concentrations of K<sup>+</sup> in leaf tissue acts as an anti-freeze to the leaf tissue and protect it from frost to a certain degree.

### INSECT AND DISEASE PROTECTION

Potassium plays a major role in the construction of the cuticle layer. This cuticle layer is the plants first line of defense to disease and insect attack.

Plants receiving adequate K<sup>+</sup> nutrition have a stronger enzyme activity and are capable of withstanding more fungal attack. Increasing K<sup>+</sup> nutrition will reduce the amount of disease both in the root and in the above ground parts of the plant.

The most significant impact that we see with adequate K<sup>+</sup> nutrition is that of the increased defense that the plant has to sucking insect. When the K<sup>+</sup> levels are adequate, and the sap pH is in the 7 – 8 range sucking insects are not attracted to the sap.

### QUALITY AND CONSUMERS DEMAND

High produce quality is essential for profitable production. Quality can be measured in many ways. High on the list for consumer acceptance is produce of uniform size, colour, and maturity, with enhanced flavour, free of blemishes or unusual marking, and free of any sign of disease. Potassium plays a significant role in all of these considerations.

### SUMMARY

In the final analysis, Potassium does not work alone; rather, it functions with other essential nutrients and crop management inputs to produce the final product. The importance of balanced nutrition and efficient use of all plant nutrients are recognized. The special role of Potassium in crop quality is of particular importance for overall production.



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

Visit our YouTube Channel <https://www.youtube.com/user/alcanadalabs>



### Latest Videos:



In Season Plant Analysis to Monitor Crop Performance...



Introduction to A&L Labs Soil Health - VitTellus® Soil...



## Soil Test this Fall

The importance of soil testing is understanding what nutrient levels are in your field to start, and where you want to get to so you can optimize crop production and returns on your farm.

The research that we have done at A&L Biologicals ([www.albiologicals.com](http://www.albiologicals.com)) demonstrated that our fertility balance and our soil nutrient levels is very important to overall soil health. Without adequate balance of nutrition, we can't get desired microbial activity.



## Get out & get your soil test done this Fall!

Need help? Deveron offers soil testing collection services – check with your ag retailer or agronomist or contact our office! View Deveron's On Demand Soil Sampling Services Newsletter: <https://mailchi.mp/35b4f2b90307/fall-soil-sampling-5311762>

### Deveron Soil Collection Services:

- Service available across most of Canada and the US Midwest
- Rapid turnaround times from collection to analysis
- Shipping provided from collection locations directly to A&L Labs
- A&L Certified Collection Specialists



Visit the A&L ONLINE customer information website for more SOIL information

<https://www.alonline.alcanada.com/soil>

#### Soil Sampling Resources

- [A&L Soil Sampling Guide](#)
- [A&L Soil Sampling FAQs](#)
- [Precision Agriculture Update: Bulk, Zone, Site Specific Soil Sampling \(April 2020 Newsletter\)](#)

#### Soil Tests Available from A&L Canada Labs

- [A&L Soil Test Packages](#)
- [Western Canadian Soil Test Packages](#)
- [For SOIL HEALTH Tests - click here](#)

#### How do I read my report?

- [Explanation of a Soil Analysis Report](#)
- [Understanding Your A&L Soil Test Report \(Infographic\)](#)

#### How can I learn more?

- [View A&L Soil Test Packages Available](#)
- Contact your Ag Retailer or Crop Consultant
- [Contact the A&L Customer Service Team](#)
- Office: Call us toll free 1-855-837-8347, or email [alcanadalabs@alcanada.com](mailto:alcanadalabs@alcanada.com)

### LEARN MORE:

#### A&L FACT SHEET (573):

### UNDERSTANDING SOIL TESTS

Soil tests are a valuable agronomic resource if they are fully used and properly understood.

Plant nutrition and plant to soil interactions are complex mechanism with a number of environmental and external conditions affecting the process. There are 17 elements involved in plant nutrition, three that are supplied naturally that we have little control over and 14 that are supplied by soil and or by fertilizer applications

#### READ THE FACT SHEET ONLINE:

[https://www.alcanada.com/pdf/Tech\\_Bulletins/Soil/Testing/573-Understanding\\_Soil\\_Testes.pdf](https://www.alcanada.com/pdf/Tech_Bulletins/Soil/Testing/573-Understanding_Soil_Testes.pdf)

## RECENTLY ADDED TESTS TO A&L'S SERVICES

TEST	DESCRIPTION	TURNAROUND TIME (TAT)*	PRICE (CAD)	SUBMISSION CODE
<b>VitTellus Bio<sup>SM</sup></b>	A soil health test that quantifies soil microbial populations	3 - 5 business days	VitTellus + VitTellus Bio COMBINED ANALYSIS: \$150.00	SHTEST3
<b>Mycotoxin Screening</b>	A quicker, more affordable mycotoxin test	2 - 3 days	\$75.00	MYCO7
<b>Seed Germination</b>	For confirming quality of on-farm use seed	10 - 15 days	\$57.75	ATSEED
<b>GMO Screening</b>	Confirmation for crops destined for export	3 days	\$157.50 - \$294.00	Crop Specific
<b>Soil Pathogen Testing</b>	Disease Diagnostics Crop Specific	3 - 5 days	\$158.00	Crop Specific

*\*From when the sample has arrived in the lab*

### New Soil Analyzer Support

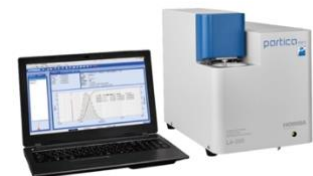
#### Quicker TAT with New Equipment for Soil Textural Analysis

Soil particle size analysis determines the relative proportions of sand, silt and clay in a soil. These size fractions are made up of the mineral component of a soil and together determine soil texture. Soil texture is a fundamental soil characteristic that has a strong influence on several other properties that impact agricultural potential. Soil texture affects nutrient retention, water storage and drainage and compaction. Soils with a higher proportion of sand retain less nutrients and water when compared to clay soils.

*“We have begun using the Horiba Partica Mini LA-350 which is a laser scattering particle size distribution analyzer. It uses far less bench space than the hydrometer method and requires a smaller sample size and less time for analysis. We have done validation to ensure it produces repeatable results and is comparable to the hydrometer method.”*

*Richard Robins, Agronomy, Customer Support, A&L Canada Laboratories Inc.*

3 Day TAT



## WELCOME!!

### Kathrine Murray Joins A&L as Business Development Representative for Quebec

We are pleased to announce Katherine Murray will represent the company as Business Development Representative for the province of Quebec.

Ms. Murray is a graduate of the University of Guelph with a bachelor's degree in Agriculture, a Graduate Certificate from Iowa State University in Food Safety and Defense, and Member of the Ordre des Agronomes du Quebec (OAQ). Katherine brings great experience from her past roles with multinational companies in the seed and crop protection industries. Katherine's agronomy background and passion for the industry makes her well suited to support the clients of A&L Canada Laboratories. Katherine will be located in the Saint-Jean-sur-Richelieu area of Quebec providing in-field service to clients.



#### A&L Agronomy & Business Development Representatives Across Canada:

- **Holland Cahill**, Maritime Provinces – [hcahill@alcanada.com](mailto:hcahill@alcanada.com)
- **Katherine Murray**, Quebec – [kmurray@alcanada.com](mailto:kmurray@alcanada.com)
- **Chris Meier**, Eastern Ontario & Quebec – [cmeier@alcanada.com](mailto:cmeier@alcanada.com)
- **Mike Folkard**, Southwestern Ontario – [mfolkard@alcanada.com](mailto:mfolkard@alcanada.com)
- **Noah Bertholet**, Saskatchewan – [nbertholet@alcanada.com](mailto:nbertholet@alcanada.com)
- **Jill Debenham**, Saskatchewan & Manitoba – [jdebenham@alcanada.com](mailto:jdebenham@alcanada.com)
- **Norm Dueck**, Alberta & British Columbia – [ndueck@alcanada.com](mailto:ndueck@alcanada.com)
- **Brain Coutts**, Food & Pharma, Strategy and Business Development Manager – [bcoutts@alcanada.com](mailto:bcoutts@alcanada.com)



#### How multiple in-season tissue test will optimize your fertility program and yields

Check plant nutrient levels at critical crop growth states to identify existing and potential problems

by Treena Hein, Grainews

<https://www.grainews.ca/crops/how-multiple-in-season-tissue-tests-will-optimize-your-fertility-program-and-yields/>

In the News  
**Grainews**



## 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)



## EVENTS

### Canada’s Outdoor Farm Show

September 15 – 18<sup>th</sup>, 2020

[www.outdoorfarmshow.com](http://www.outdoorfarmshow.com)



### The 30th Annual & 1st On-Line National Organics Recycling Conference of The Compost Council of Canada

Monday, September 28 – Friday, October 2, 2020

TIMES: Sessions to be held at various times throughout the conference period – for A&L’s Presentation check the event website closer to the date.

Visit [www.compost.org](http://www.compost.org) for more information.



### Canadian Greenhouse Conference

October 7 – 8<sup>th</sup>, 2020

Visit

<https://www.canadiangreenhouseconference.com/ModuleFile/?id=566>

for complete show details!



## Other News:

Vive and A&L Biologicals collaborate on Sustainable Development Tech. Canada (SDTC) Project  
<https://www.albiologicals.com/post/vive-crop-protection-and-a-l-biologicals-collaborate-on-sustainable-development-technology-canada>

New GMO Screening Test Available from A&L Canada Laboratories  
<https://www.alcanada.com/content/news/index?nid=57>

## We are here to help!



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### A&L Canada Labs Social Media

Twitter @ALCanadaLabs: <https://www.twitter.com/alcanadalabs>

Instagram @ALCanadaLabs: <https://www.instagram.com/alcanadalabs>

Facebook: <https://www.facebook.com/alcanadalabs/>

LinkedIn: <https://www.linkedin.com/company/a-l-canada-laboratories>

YouTube: <https://www.youtube.com/user/alcanadalabs>

