



**A & L CANADA  
LABORATORIES INC.**



## Fall 2024 Agriculture Newsletter

### Is building soils economical?

By: Greg Patterson

Corn yields today are highly variable with harvests ranging anywhere from 120 to more than 400 bu/ac – a possibility that was first realized by producers like Herman Warsaw and Francis Childs.



In 1941, Herman and Evelyn Warsaw bought their Illinois farm at what they thought was a “bargain” price. It had a USDA established corn yield of 38 bu/ac. Herman soon realized that the land had been poorly managed, and he would need to build it up significantly to secure a return on their investment. He understood that it takes time to change the soil and its physical properties and wasted no time getting started.

From 1975 to 1985, Herman managed to produce 5 yields of over 300 bu/ac with a 15-year average of 274 bu/ac (which includes data from several years with low rainfall). His record-breaking yield of 338 bu/ac in 1975 was only surpassed in 1985 when he broke his own record with 370 bu/ac.

Francis Childs eventually beat Herman Warsaw’s record with 393-405 bu/ac in 2001. The following year, he produced 442 bu/ac with strips of the field reported to have exceeded 500 bu.

In the case of Herman Warsaw, we saw a producer that was determined to identify and address the limiting factors in the fields he was farming. In particular, he focused on building fertility levels and increasing the plant popula-

tion. His 1985 soil test indicates that his efforts to build soil fertility – and overall soil health – were quite successful. Using those results, I would estimate that he achieved a Soil Health Index (SHI) somewhere in the range of 38 – 42.

Parameter	Soil Test Results	Optimum Ranges
P-1	80 ppm	34 - 55 ppm
K	400 ppm	161 - 320 ppm
Mg	436 ppm	151 - 300 ppm
Ca	2425 ppm	1201 - 2400 ppm
S	35 ppm	*
pH	6.0	6.2 - 7.0
C.E.C.	23	N/A
OM	5.3 %	Above 4 %
% K	4.5 %	2 - 4 %
% Mg	15.8 %	5 - 20 %
% Ca	52.7 %	60 - 80 %
K:Mg	0.29	0.2 - 0.35

Fig. 1: Soil test results from Herman Warsaw in 1985, the year he produced a 370-bushel corn crop. Calculated from original reported units.

Note: Optimum ranges are from William Albrecht or additional research conducted by A&L Canada Labs.

\* Optimum range for sulphur is determined by the carbonates in each soil test.

As producers, considering the high cost of land, it is essential to invest in building soils so that they can grow a decent crop every year. If you estimate the cost of production and input costs on a per acre basis, it doesn’t cost more to produce 250 bushels than it does 150 bushels, but the return is huge. Looking at cost of production on a per bushel basis, we can calculate that the cost per bushel goes down as yields go up. Having a field that produces a good yield consistently year over year is largely due to Soil Health.

Our biological research has shown that as the Soil Health Index (SHI) reaches 38, yields increase and become more consistent and nutrient use efficiency goes up.

- As SHI increases, microbial populations will begin to shift, but the shift is not significant to beneficial organisms until it reaches approx. 38
- A significant increase in *Bacillus* population starts at approx. 32
- *Pseudomonas*, *Rhizobium*, Nitrogen fixing bacteria, and other beneficials begin to increase and enter the rhizosphere around 38

Source: 300 Bushel Corn. (2018, February 24). Herman Warsaw World Record Corn Producer (3 parts) [Video]. YouTube. [https://www.youtube.com/watch?v=0l\\_nG29c-7l&t=548s](https://www.youtube.com/watch?v=0l_nG29c-7l&t=548s)

## Case Study: ROI on Soil Health

From 2018 to 2020, A&L assisted the St. Clair Region Soil and Crop Improvement Association with an independent research study. The study encompassed 8 fields with 2 zones each, for a total of 16 sample areas. Results for each area are the average of 5 sample points – 80 soil samples altogether. The data below is a snapshot from this study that demonstrates the potential return on investment as it relates to increased Soil Health.

Field ID	1B	6A	6B	8B
Yield	285.3	205.8	183.6	140.5
Soil Health Index	42.4	40.6	32.2	31.8
Revenue @ \$6/bu	\$1711.80	\$1234.80	\$1101.60	\$843.00

Yield data from field #5 was not collected but, of the remaining 7 fields, all but field #2 exhibited a positive correlation between yield and Soil Health. In field #2, the inconsistency can be explained by pH which is not a factor in determining our SHI. Site 2A yielded 196.7 bu/ac with an average SHI of 33.8 while site 2B yielded 135.9 bu/ac with a SHI of 34.8. The pH at each site was 6.1 and 4.8, respectively. All other points analyzed as part of this project had a pH ranging from 5.4 to 8.

## NEW Map Layer: Estimated Soil Health Index

\$2.50 + tax per sample \*

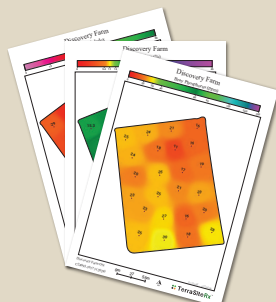
Delivered as a [TerraSiteRX™](#) map book page.

Available if the following conditions are met:

1. 2.5 to 5-acre site-specific soil collection
2. All samples submitted for complete analysis
3. Minimum of 2 [VitTellus™ Soil Health](#) tests (required for calibration of Estimated SHI)

Does not include Solvita® CO2 Respiration test which is used to calculate the Soil Health Index on our VitTellus™ Soil Health report

\* Price subject to change.



**TerraSiteRx™**

## Reduce Variability: Site-Specific Sampling

By: Wayne Black

It is not always about achieving higher yields but eliminating the low yields or improving the low yielding areas of a field. In any field, if we identify even 10% of the field that is low producing, it is worth the investment to improve these areas as they take as many dollars of inputs as the higher producing areas but do not generate the returns. Even a poor field can produce a decent crop in a good year, but we need our fields to be consistent year over year and even return a respectable yield in a backward year.

In today's environment of improving tighter margins and nutrient use efficiency, we recognize that over application and under application of fertilizer is equally wasteful in terms of dollars and effective use of the fertilizer applied. It is not about reducing the application of fertilizer, it is about application of the fertilizer where it will be most effective.

To further understand the challenges of your field along with what recommendations are needed to improve the quality of the crop, we highly recommend that you consider a site-specific soil sampling approach. Agronomic recommendations will also show a more positive impact since the fertilizer will be applied most closely to where it is actually needed.

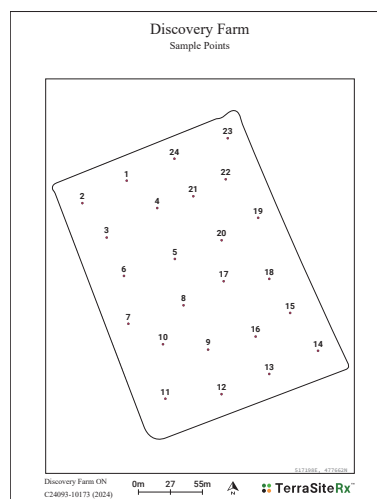


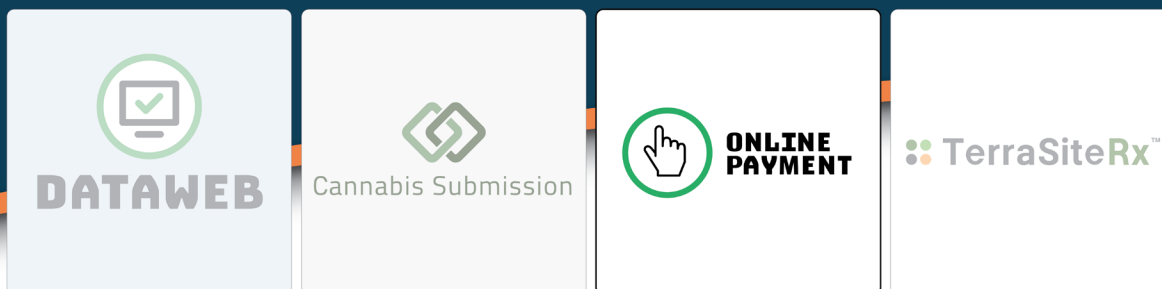
Fig. 2: Example page from our TerraSiteRX™ map book of a field that was soil sampled using a site-specific approach.

Each point represents a georeferenced location. This approach ensures consistent soil (or plant tissue) test results by allowing collectors to revisit the same points year after year.

Soil test data is only as good as the sample that is pulled. When we refer to site-specific sampling, we need 10-15 core samples from within a 15' radius of the GPS located sample point. Reason for the 10-15 core samples is to

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# Welcome to A&L Client Portal



## Improvements to Online Payment

As of February 1, 2024, the Online Payment feature has been relocated from our website to the A&L Client Portal. This move is designed to enhance your payment experience by providing a more secure and streamlined process. To access, click the Client Portal button in the top right corner of our website or go directly to [portal.alcanada.com](https://portal.alcanada.com)

Initial access to the Client Portal will only provide access to the Online Payment module. To gain access to DataWeb, TerraSiteRX™ or Cannabis Online Submission (COS), please contact our team at [portalsupport@alcanada.com](mailto:portalsupport@alcanada.com)

### SETUP:

To access the Client Portal, you must have an existing A&L account. If you do not have an account, please contact us at [aginfo@alcanada.com](mailto:aginfo@alcanada.com) and you will be provided with a new client form.

### LOGIN:

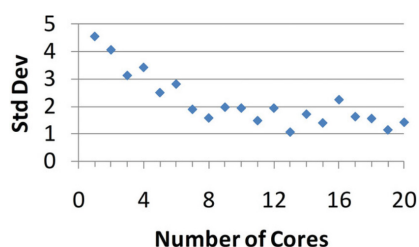
Click “Forgot Password” and enter your email. If it matches an existing account, a confirmation code will be provided. If not, please contact the support team at [portalsupport@alcanada.com](mailto:portalsupport@alcanada.com)

### CREDENTIALS:

Your traditional login credentials for DataWeb, TerraSiteRX, COS, etc. will not work with the Client Portal. To better protect your data, we have moved all applications to a single sign-on (SSO) format.

## Reduce Variability: Site-Specific Sampling *(continued)*

reduce the deviation from within the sample. Research has shown that when pulling less than 8 core samples per soil sample, the standard deviation starts to increase. After you get more than 10 samples, the standard deviation levels out.



Source: Larkin, M. (2024), *The Influence of a Soil Sample Core*. Crops & Soils Mag., 57: 52-57. <https://doi.org/10.1002/crso.20351>

Give your crop inputs retailer a call and ask for one of your fields to be site-specific soil sampled this fall. Look at it as an investment in reducing the variability in crop yields and quality. Seeing is believing.

## 2025 Soil Fertility Workshops

Registration will be opening soon! Keep an eye on our website for the latest updates [www.alcanada.com/workshops](https://www.alcanada.com/workshops)

### London, ON:

- Level 1:** January 28 or 29
- Level 2:** February 25 & 26
- Level 3:** March 19 (*hybrid*)

### Saskatoon, SK:

- Level 2:** February 10 & 11