

# Soil Health Assessment and Plan (SHAP) Tool

## Ground-Truthing Project - Quick Guide and Details

### BACKGROUND

OMAFRA has released the SHAP tool for use. SHAP is a mobile- or web-app based tool, created to assess field practices and is paired with lab analysis of soil health indicators.

Now we get to populate the database with more agricultural soils from across Ontario.

This is critically important to building scoring functions to compare individual samples to other soils. We aim to refine scoring functions based on texture.

We need your help.

This Ground-Truthing Project uses a smaller number of SHAP questions but all the soil BMPs are covered.

### WHAT'S INCLUDED?

#### FREE SHAP analysis:

1. organic matter (OM)
2. aggregate stability
3. active carbon (POXC)
4. respiration (96-hr carbon mineralization CO<sub>2</sub>)
5. potentially mineralizable nitrogen (PMN)

#### FREE Soil Texture analysis:

(% sand, silt, clay)

#### FREE Standard Fertility Package:

(OM, pH, CEC, P, K, Ca, Mg)

AND

organic carbon and total nitrogen

This is valued at over \$200 per sample.

You will be part of building a soil health tool for #OntAg backed by real Ontario data!

This is a first-come-first-serve offer with limited number of samples in 2023 to 2025.

### WHAT HAPPENS TO THE DATA?

This is an abbreviated SHAP Tool as part of a project run by Soils At Guelph with the goal of building the SHAP database with Ontario soil sample. No personal information (e.g. landowner names, addresses) is being collected. Any production information (e.g. questions on cropping rotations, tillage methods) is being collected in accordance with the requirements of the Freedom of Information and Protection of Privacy Act for the purposes of this project. The information obtained will be anonymized, and may be made available to collaborating organizations, such as University, EFAO, Greenbelt Foundation, OSCIA, OSN, OMAFRA, and AAFC, and only for specific soil-related research. By participating in this project, you acknowledge that Soils At Guelph is collecting the data for this purpose and provide your consent.

### REPORTING

Agri-Food Laboratories will email you the lab results "SHAP REPORT" directly.

Note that soil health testing is laborious and takes more time than other tests. By early 2024, Soils At Guelph will report soil health scores based on compiled data and synthesize information to better understand Ontario soil.

### THANK YOU

You are contributing to our common understanding of soil health in Ontario!



SOILS AT GUELPH

QUESTIONS? email [Soils@uoguelph.ca](mailto:Soils@uoguelph.ca)

MORE ON SOILS? visit [soilsatguelph.ca](http://soilsatguelph.ca)

For the full SHAP tool, please search Field Crop News [www.fieldcropnews.com](http://www.fieldcropnews.com)

# Soil Health Assessment and Plan (SHAP) Tool

## Procedure Quick Guide

### Before going to the field

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#### STEP 1:

Sign up for a sample by emailing <[soils@uoguelph.ca](mailto:soils@uoguelph.ca)>.

Subject line: 'SHAP testing'

In email include: name, county, and the number of fields and number of samples you're interested in collecting. \*\*

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#### STEP 2:

Receive link to SHAP- Soil Management Survey Tool from <[microsoft@powerapps.com](mailto:microsoft@powerapps.com)>. USE LINK on your computer or mobile device and ANSWER the prompts from the tool. See "Table - SHAP Tool Data Collection Details" for the production information required.



ONCE SUBMITTED, a unique sample ID will be generated and emailed to you. This ID links production info to field location and lab results. The email will also contain a new link to the SHAP-In-Field Tool. PRINT a sample submission form for later use in field.



\*\*Agricultural soils only. Sorry, we can't accept organic (muck) soils yet. Because we are trying to get a good spread across the province, samples are limited to 1 per field, or 2 per field if comparing a good and poor area.

We are prioritizing lighter textured soils and northern Ontario.

### In the field

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#### STEP 3:

Use the new link to connect to the SHAP- In-Field Data Collection Form Tool. Enter your Sample ID number and other details (see table - SHAP Tool Data Collection Details). Be sure to refresh when entering GPS point so that the location is in the field where you are soil sampling.

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#### STEP 4:

Collect 20-30 core samples to a 6-inch depth from within a 600 square foot area (roughly a circle with a 3 m radius) around the chosen point. This approach is recommended for benchmarking and is highly recommended. (Samples can also be composited from the same management zone or by using guidelines for standard fertility sampling – i.e. < 25 ac per composite sample). Remove surface debris and collect cores as you would for a normal soil fertility sample.

Place cores into a clean pail.

Mix cores to break apart, without completely pulverizing them.

Transfer into one standard soil sample bag and box.

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#### STEP 5:

Label the boxes exactly using your unique sample ID. Fill AFL submission form indicating a "Soils At Guelph SHAP Project" analysis. Include form with samples.

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#### STEP 6:

Ship next-day delivery where possible. You can store samples up to 7 days in the fridge before they are shipped. Ship one standard soil sample box as soon as possible TO THIS LAB ONLY:

Agri-Food Laboratories University of Guelph 95 Stone Rd W,  
Guelph, ON, N1G2Z4

Tel: 519-767-6299 Toll Free: 1-877-UofG-AFL (1-877-863-4235)





# Soil Health Assessment and Plan (SHAP) Tool

## SHAP Tool (Survey123) Data Collection Details

Before going to the field:

Submit.		
Entry	Example/ Options	Description
<b>STEP 1: Sign up</b> by sending email to < <a href="mailto:soils@uoguelph.ca">soils@uoguelph.ca</a> > (see above)		
<b>STEP 2: Receive link</b> to SHAP- Soil Management Survey Tool from < <a href="mailto:microsoft@powerapps.com">microsoft@powerapps.com</a> > Use link, answer prompts below from the tool.		
<b>Reason for sampling</b>	Below_average_field, Average_field, Good_field, New_field, Setting_a_baseline, Identifying_limitations, Other	Select the reason for sampling this field.
<b>Soil Challenges</b>	Erosion, Inconsistent_crop_growth, Excess_water_drainage_ponding, Drought_susceptibility, Soil_structure, Fertility_nutrient_use_efficiency, Residue_build_up, Other	Select 3 soil challenges in this field.
<b>Current Crop</b>	<i>Corn (silage)</i>	Select the current crop from the drop down list
<b>Previous 3 years crops</b>	<b>2022</b> <i>Soybeans</i>	Select the previous 3 years crops from the drop-down list.
	<b>2021</b> <i>Corn (grain)</i>	
	<b>2020</b> <i>Wheat (winter)</i>	
<b>Tillage System</b>	<b>Type</b> <i>No_disturbance (perennial), No_till, Strip_zone_till, Light, Moderate, Heavy</i>	Select the type that best describes the overall tillage intensity.
	<b>Frequency</b> <i>1-4, 5-8, 9-12, &gt;12</i>	Select the range that includes the total number of tillage passes in this field over the past 4 years.
	<b>Timing</b> <i>Spring, Fall, Winter</i>	Select the timing of the most aggressive tillage pass.
<b>Cover Crops</b> <i>(Yes/No)</i>	<b>Type</b> <i>single, low mix, &gt;3_mix</i>	If cover crops used, select the options that best describe.
	<b>Termination method</b> <i>Freezing, Herbicide, Tillage, Mowing, Grazing_cut_for_feed, Roller_crimping</i>	Select all the termination methods that apply.
	<b>Termination timing</b> <i>Spring, Summer, Fall, Winter</i>	Select all the termination timings that apply.
<b>Organic Amendments</b> <i>(Yes/No)</i>	<b>Type</b> <i>Solid, liquid</i>	If organic amendments used, select the type.
	<b>Frequency</b> <i>Every_time_in_rotation, With_cover_crop, After_forage_harvest, When_material_available</i>	Select what bests describes how often.
<b>Compaction Reduction</b> <i>(Yes/No)</i>	<i>Avoid_Wet_Soil_Traffic, Flotation_Tires, Inflation_Pressure_LT_15, Central_Tire_Inflation_Systems, Permanent_Tramlines, Controlled_Traffic</i>	Select the type that best describes methods.
<b>Crop Residue Removal</b> <i>(Yes/No)</i>	<i>1</i>	If remove crop residues, number of times in last 4 years.
<b>Perennials Used</b> <i>(Yes/No)</i>	<i>4</i>	If yes, total years of perennials in last 12 years.

## In the field:

<b>STEP 3: Use new link</b> to the SHAP- In-field Data Collection Form Tool emailed to you. Enter your Sample ID and other details (see below).		
<b>Sample ID</b>	<i>2023SoilsatG123</i>	This is provided by email and links all components together. <b>Record this sample ID number exactly on your sample box.</b>
<b>Date Sampled</b> ( <i>mm/dd/yy</i> )	<i>06/30/23</i>	Date when sample was collected.
<b>Composite type</b>	<i>Point, zone, field</i>	Indicate whether the sample is composited from a specific point (600ft) in field (recommended), a pre-existing management zone, or a field (standard fertility sampling)
<b>GPS Coordinates</b>	<b>x</b> ( <i>≥7 decimals</i> )	Collect using smartphone mapping app or GPS receiver. If you do not know how, ask your contact. > 7 digits after the decimal.
	<b>y</b> ( <i>≥7 decimals</i> )	
<b>STEP 4: Soil sample, bag, box</b>		
<b>STEP 5: Label</b> sample box with your unique ID. Fill AFL submission form. Indicate "Soils At Guelph SHAP Project" analysis on the form.		
<b>STEP 6: Send</b> to Agri-Food Laboratories 95 Stone Rd W. Guelph, ON, N1G2Z4. Tel: 519-767-6299		

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