

SOIL HEALTH BENCHMARK REPORT

Individual Results

PREPARED FOR: NAME

SAMPLING DATE: Fall 2019

INCLUDED IN THIS REPORT

- Summary of your results
- What your data mean
- Contact information
- *Supplemental Information:* Definitions, calculations and data literacy; Tracking soil health in the future; Summary of group data; References; Data ownership and sharing
- A&L lab results

SUMMARY OF YOUR RESULTS

Table 1. Results for each sample. Basic S1 package and active carbon analyses from A&L are attached.

Bag	Area	Soil texture	Organic matter (OM)	Active carbon (AC)	AC: OM	Water infiltration
#	Name	From survey	%	mg C/kg soil	Ratio	Inches/hour
1	345-S	Clay loam	3.5	961	275	2.13
2			3.6	944	262	2.28
3			3.4	963	283	7.58
4	645-B	Sandy loam	4.0	964	241	9.15
5			2.8	921	329	5.28
6			2.8	880	314	28.80
7	872-N	Sandy loam	2.2	744	338	0.84
8			2.4	831	346	2.71
9			2.5	824	330	1.30

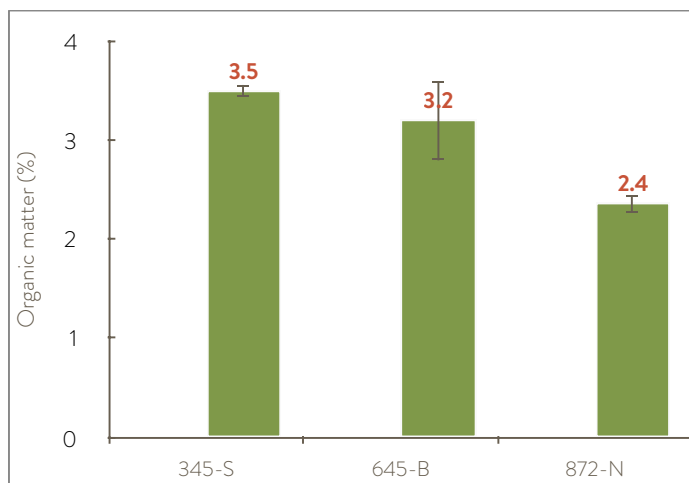


Figure 1. Organic matter

Field 345-S had higher OM than field 872-N ($P=0.04$); and field 645-B had higher OM than 872-N ($P=0.11$). There was no statistical or practical difference in OM between 345-S and 645-B ($P=0.66$).

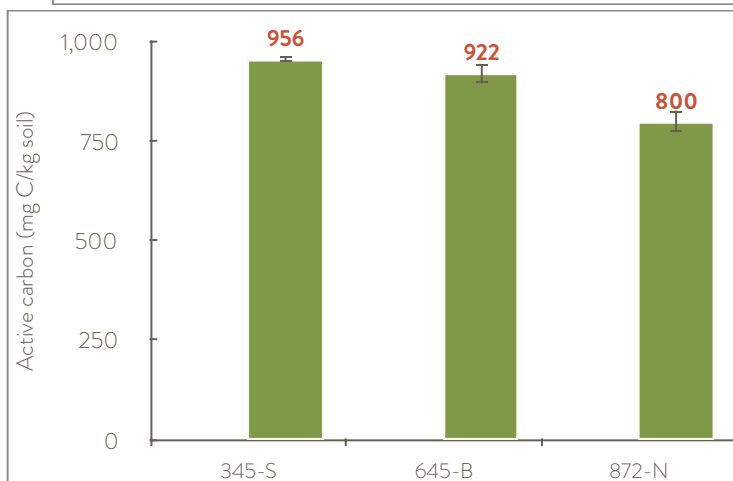


Figure 2. Active carbon

Fields 345-S ($P=0.005$) and 645-B ($P=0.02$) had higher AC than field 872-N. There was no statistical or practical difference in AC between 345-S and 645-B ($P=0.54$).

Note: 956 mgC/kg soil is close to the detection limit so that the true active carbon level for this field maybe be higher. Read more about in the legend for Supplemental Figure 1.

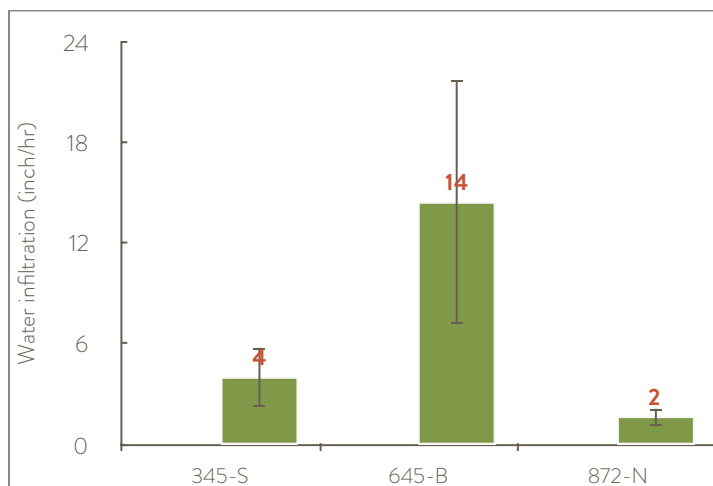


Figure 3. Water infiltration

Because of the variability among replicates, there was no statistical difference in water infiltration among the three fields ($P=0.16$). That said, 872-N had the lowest (i.e. worst) infiltration, which is consistent with the trend established with OM and AC.

WHAT YOUR DATA MEAN

All three measurements used in this study tell the same story with respect to a general trend among your three fields: fields 345-S and 645-B were similar and both has greater soil health than 872-N. There were also some indications that 345-S may be slightly healthier.

When you sample again in the future, you can then also see how soil health in three sites/fields is changing over time. Refer to TRACKING SOIL HEALTH IN THE FUTURE in *Supplemental Information*.

Soil organic matter

OMAFRA's OM targets by soil texture:

Sandy soils: 2.5% | **Sandy Loams:** 3.5% | **Loam:** 4% | **Clay Loams:** 4.5% | **Clay soils:** 4.5%

Note: These "targets" could be viewed as target minimums, not maximums. Reference: OMAFRA's New Horizons: Agricultural Soil Health and Conservation Strategy

How your OM data compare:

Field 345-B was below the target of 4.5% soil organic matter for clay loams; 645-B was just about at the target of 3.5% for sandy loams and 872-N was below this target for sandy loams.

Active carbon

Cornell Soil Health Laboratory averages by soil texture:

Coarse: 486 mgC/kg soil | **Medium:** 531 mgC/kg soil | **Fine:** 608 mgC/kg soil

Note: This data is taken from Cornell Soil Health Laboratory to show how AC changes with soil texture.

They are not directly comparable to your results because of differences between the lab's protocols.

Reference: Cornell Soil Health Laboratory (Fine et al. 2017)

How your AC data compare:

AC values for all three field were relatively high. Note that the average value for Field 345-B reached 1000 mgC/kg soil, which is close to the detection limit. Therefore, active carbon in this field may be higher (see Supplemental Figure 1 legend for more details).

AC : OM Ratio

The ratio of active carbon to organic matter tells us how much active carbon is available to microbes relative to the amount of organic matter.



How your AC : OM Ratio data compare:

Your AC : OM ratios were higher than average for the group. High AC relative to OM indicates that the soil microbial community has sufficient microbe-friendly inputs (i.e. roots exudates, root turnover) for building soil organic matter and regenerating soil health.

CONTACT INFORMATION

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ATTACHMENTS

Supplemental Information

A&L Soil Test Report, 1 per farm

A&L Certificate of Analysis for Active Carbon, 1 page per soil sample