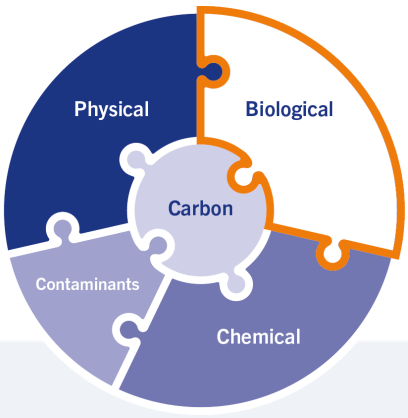
Soil Life Monitor

Soil Life Monitor is part of Eurofins Soil Health Solutions. The healthier the soil, the better the contribution to Sustainable Development Goals.



Name | Soil

Test Account
Test Line1
test 22r
Test City

Client code: LT0000001
Date report: 04/05/2023

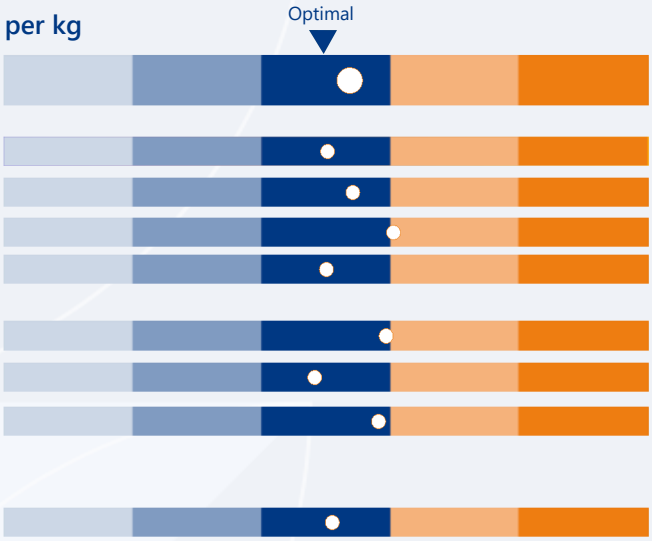
Date sampling: 09/02/2023
Sample-/order number:
528-2023-02090005

Soil layer:
0 - 30 cm

Contact Eurofins:

Contact Sample taker:

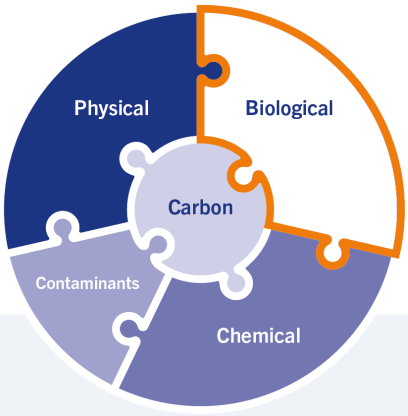
	Result	Unit mg PLFA per kg
Microbial biomass	13	
Total Bacteria	10	
Gram positive	5	
Actinomycetes	1.5	
Gram negative	6	
Total Fungi	1.3	
Saprophytes	0.5	
Mycorrhiza	0.8	
Protozoa	0.16	



	Result	Unit
Diversity Index	1.36	-
Carbon in microbial biomass	269	mg C kg^{-1}
Carbon in bacterial biomass	99	mg C kg^{-1}
Carbon in fungal biomass	91	mg C kg^{-1}
Fungi/bacteria ratio	0.9	-
Gram(+)/Gram(-) ratio	0.8	-
Acidity (pH)	6.2	-
Soil organic matter (SOM)	2.3	%
Clay	9	%

Diversity Index

Soil biodiversity represents the variety of life belowground.
A diverse mix of soil life creates healthy soils, with increased resilience.



Explanation

The biological parameters are based on the phospholipid fatty acids (PLFAs) that are present. PLFAs occur in the cell walls of living organisms. Different functional groups have a unique composition of PLFAs. By measuring the composition of the PLFAs, a fingerprint of the microbial community can be given. The target values are corrected based on the organic matter percentage.

Microbial biomass

The sum of all PLFAs is an indication of the amount of microbes. Because PLFAs are rapidly degraded after an organism dies, it mainly represents the living microbial biomass. The microbial biomass is an indicator of the general disease suppression. The more microorganisms there are, the more competition there is with pathogens for space and food. The microbial biomass can be increased by adding effective organic matter such as compost, solid manure, green manures or cultivating grains (incl. straw). Other examples of measures are reduced soil tillage, permanently covering the soil, temporary grassland or less ploughing up of permanent grassland.

Bacteria

Certain groups of bacteria break down (simple) organic material, fix nutrients, bind atmospheric nitrogen, convert ammonium into nitrate nitrogen, form stable aggregates, increase disease resistance and form breakdown products that can weaken or kill pathogens. Bacteria are stimulated by easily degradable materials with a low C/N ratio such as slurry.

Actinomycetes

Actinomycetes are a group of Gram positive bacteria that form threads that resemble fungal hyphae and are able to break down complex materials. Actinomycetes are important for disease resistance, because some species can excrete antibiotics or parasitize pathogens. They can also compete with pathogenic fungi for space and food. Actinomycetes prefer airy conditions and develop poorly in compacted soil or acid conditions (pH <5).

Fungi

Fungi cause degradation of complex forms of organic material, form stable aggregates, excrete organic acids which improve the availability of some nutrients and increase disease resistance through competition or predation. Fungi are stimulated by recalcitrant materials with a high C/N ratio such as straw and compost.

Arbuscular Mycorrhiza

The PLFA analysis gives insight in the biomass of the active mycelium (network of hyphae) of arbuscular mycorrhiza. These fungi live in symbiosis with plant roots and thereby increase the root surface. In exchange for sugars, the plant receives water and nutrients such as phosphorus and potassium. Crops that are not able to form a symbiosis with arb. mycorrhiza are crucifers (e.g. cabbage and yellow mustard) and the goosefoot family (e.g. spinach and beet). A high available phosphate content will reduce the development of mycorrhizas.

Protozoa

Protozoa are single-cell micro-organisms that contain a cell nucleus (eukaryotes). The most important function of protozoa is to make nutrients available to the plant by "grazing" on microorganisms (mainly bacteria). The activity of protozoa is highly dependent on the presence of moisture in the soil. The radius of action of protozoa is limited to water films and water-filled pores.

Fungi/bacteria ratio

The fungi/bacteria ratio indicates the proportion between the fungal and bacterial biomass (expressed in mg C / kg). In general, undisturbed ecosystems have a higher fungi/bacteria ratio than disturbed systems. Organic and low-input systems have a higher fungi/bacteria ratio compared to enriched conventional systems. Disturbances such as tillage and removal of crop residues can lower the fungi/bacteria ratio.

PLFA diversity

The Diversity Index (Shannon - Wiener index) is an indicator of the diversity of the soil life. The index uses the number of species and their abundance as inputs. Higher diversity is often related to better stability and resilience. Disturbances, lack of diverse input from food sources and an intensive crop rotation can decrease the diversity.

Gram(+)/Gram(-) ratio

Gram(+) bacteria are generally larger than Gram(-) bacteria and can form spores. This makes them more resistant to drought and water stress. Gram(+) dominant populations (>1) are more common at the start of the growing season and typically move to a more balanced community when the soil conditions become more favorable throughout the growing season. Gram(-) dominant populations (<1) are often associated with other forms of stress such as plowing and pesticide use. Gram(-) bacteria can better tolerate these forms of disturbance due to the presence of an outer membrane.

Contact & info

After this report has been sent, the sample will be stored for another two weeks for you at Eurofins Agro, if the nature and testmethod of the sample so permit. Within that period you may complain and/or request additional tests.