

Soil Life Monitor
Soil
plfa classic

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Example report
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Analysis Investigation/ordernr: 700579/003709656 Date sampling: 07-02-2024 Date report: 19-02-2024

Results	Unit	Result	low	rather low	average	rather high	high
Biological							
Microbial biomass	mg PLFA/kg	8					
Total bacteria	mg PLFA/kg	6					
Gram positive	mg PLFA/kg	2,9					
Actinomycetes	mg PLFA/kg	0,6					
Gram negative	mg PLFA/kg	3,6					
Total fungi	mg PLFA/kg	0,7					
Arbuscular Mycorrhiza	mg PLFA/kg	0,3					
Other fungi	mg PLFA/kg	0,4					
Protozoa	mg PLFA/kg	0,11					
Shannon Wiener Index		1,27					
Fungal/bacterial ratio		0,7					
Gram(+)/Gram(-) ratio		0,8					
Physical							
Acidity (pH)		4,8					
C-organic	%	2,63					
Organic matter	%	4,6					
SOC/SOM ratio		0,57					
Clay (<2 µm)	%	2					

Organic matter Figure: Quality of the organic matter



Organic carbon held in micro-organisms

	mg C/kg
Microbial biomass	169
Bacterial biomass	61
Fungal biomass	43

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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.

Total 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.

Total 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).

Total and other 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 in the soil. 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. In addition, mycorrhizas play a role in disease suppression. 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.

Gram(+)/Gram(-) ratio

Grams(+) 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.

Quality of the organic matter

Organic matter mainly consists of C, N, P and S. Dynamic organic matter contains relatively many N and S, and is easily broken down by microbes. Hereby, nutrients are mineralized that become available for the crop. Stable organic matter contains a relatively large amount of C, and is broken down less fast by microbes. Stable organic matter contributes, among other things, to the processability and looseness of the soil. The quality of the organic matter can be (gradually) adjusted by paying attention to the properties of organic materials (degradability and C/N ratio) such as animal manure, compost and crop residues.

Contact & info

Soil layer:	0 - 20 cm
Sample was taken by:	Eurofins Agro, Monsternemer
Contact sample taking:	Klantenservice Agro: 0888761010
Sampling method:	W-pattern, at least 40 sub samples, according to Eurofins Agro standard MIN 1000

If the following information is shown in the reports, this information may have been provided by the client and may affect the valuation, advice and/or analysis result:
sampling depth, soil type, crop.

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Method	Biological		Em: PLFA
	Acidity (pH)		Em: NIRS
	C-organic	Q	Em: NIRS
	Organic matter	Q	Em: NIRS

Q Method accredited by RvA

Em: Method Eurofins Agro, Gw: Equivalent of, Cf: In conformity with

Results are reported in dry soil.

The analyses were done at Eurofins Agro, Wageningen (NL).

The results relate exclusively to the sample taken and received by Eurofins Agro, and to the material processed on 08-02-2024, and therefore to the sample analysed. For a detailed description of the sampling and analysis methods used, visit www.eurofins-agro.com

EXAMPLE