Collection of Practice Abstracts

G2

the good practices

SOIL MICROFLORA

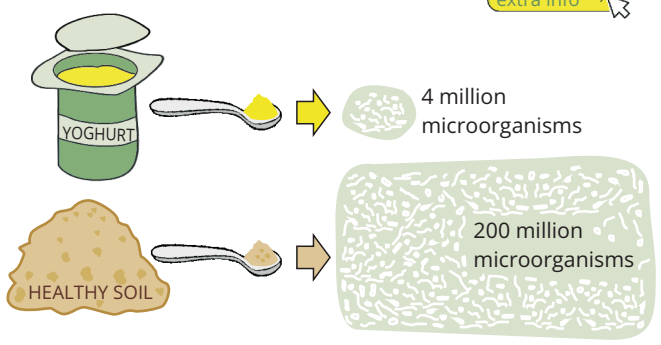
THE RESULTS OF SUSTAINOLIVE

SUSTAINOLIVE.EU

WHAT IS SOIL MICROFLORA?

Also known as microbiota, it is the community of microorganisms (fungi, bacteria and protozoa) that co-inhabit the soil, interacting with plants and influencing their health.

extra info



BENEFITS DELIVERED BY SOIL MICROORGANISMS

- they **provide nutrients** through the decomposition of organic matter in the soil
- they compete with microorganisms that produce **diseases in crops, limiting their incidence**
- they favor the formation of aggregates that provide **stability to the soil**
- they favor the decomposition of the bedrock and, therefore, the **formation of new soil**
- they eliminate **toxic substances**
- they can join fungi and plant roots to create **mycorrizhae** that provide with **essential plant nutrients, especially with nitrogen and phosphorus**

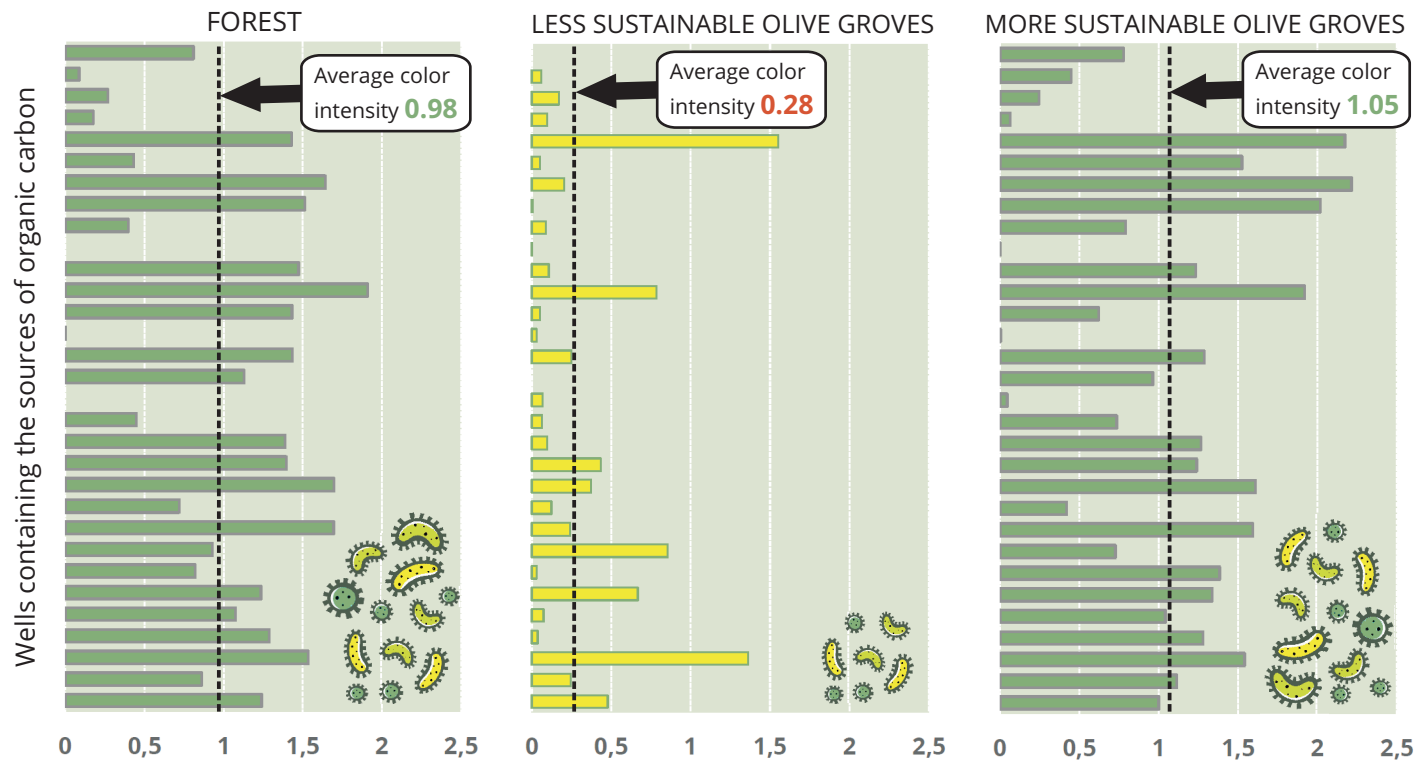
KEEP IN MIND THAT...

for a soil to host a diverse and rich microflora, it is imperative that a **large quantity and diversity of sources of organic matter** are available, since it is such diversity that will secure that a wide range of microorganisms can remain fully functional.

OUR METHODOLOGY

At SUSTAINOLIVE, we have developed a simple an ingenious method to estimate the quantity and quality of microorganisms living in the soil of olive groves, and we have already tested it over our Spanish experimental plots. We want to test what happens to soils in the olive groves where some sustainable agronomic practices have been applied, in comparison to conventional olive groves. As a reference, we have chosen forest soils from the same area, thinking that they will contain healthy communities of microbes.

It consists of exposing the soil samples and the microorganisms inside to a number of selected sources of organic matter. The choice was made to cover all main sources commonly found in soils. After incubating them at 28ºC for 5 days, we compare what happens in the different wells that hold the samples with respect to a "control" well without any source of organic matter. If there are no micoorganisms to be found in the soil sample, no colour will arise; on the contrary, if there is a community of microorganisms capable of feeding on the supplied carbon source, it will be decomposed, causing an increase in the intensity of the color. The greater the abundance of the microbial community, the greater the intensity of the resulting color.



ONE REMARK

Absorbance is a magnitude used in various scientific disciplines to identify the amount of light that is absorbed by a sample. The device for doing this is called a spectrophotometer.

The intensity of the microbial activity detected in the soils of olive groves that apply sustainable management practices was similar (even slightly higher) to those of the forest soils considered as reference. In addition, it was almost **4 times higher** than that estimated in soils of olive groves that follow a conventional model.

Soil microbial community in most **olive groves applying sustainable management practices** that we examined in Spain was, therefore, **much more abundant and diverse** that on conventional olive groves.

Olive groves whose soils are relatively unaltered (**minimum tillage**) and have a wide variety of types of organic matter (there is a contribution of **cleared cover crops remains**, **shredded pruning remains**, **manure and/or composted olive mill pomaces**), develop a much more diverse and biologically active soil microflora (similar to that existing in a forest) which has enormous value for the farmer in ecological, productive and economic terms.

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Authors: Jose Liétor, Julio Calero, Gustavo F. Ruiz-Cátedra & Roberto García Ruiz (UJA), Alejandro Gallego (TKV)

Contact: rgarcia@ujaen.es