Collection of Practice Abstracts

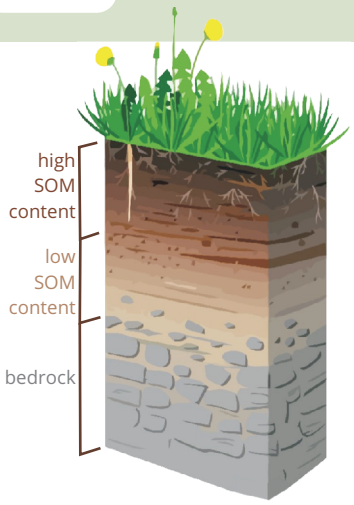
C2

carbon cycle

SOIL ORGANIC MATTER

THE RESULTS OF SUSTAINOLIVE

SUSTAINOLIVE.EU

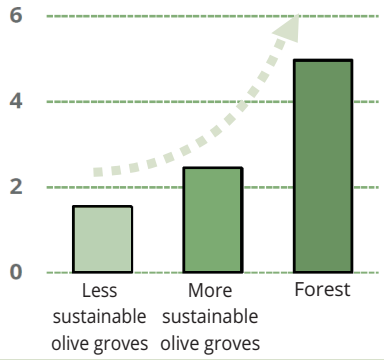


THE DEFINITION

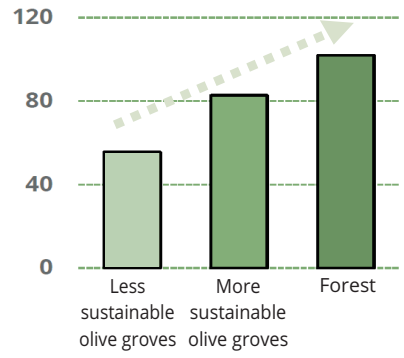
Maybe you know it as **humus** or **mulch**. Soil organic matter (SOM) is the pool of plant and animal waste, decomposed to different levels and transformed by the action of microorganisms.

SOM is largely located in the upper 20 cm of soils and is responsible for the darkening and fertility of the soil. The amount of SOM depends on the type of vegetation, the climate, the texture and drainage of the soil and the tillage intensity.

Average percentage of organic matter in topsoils of the Spanish experimental plots of SUSTAINOLIVE compared to that of some adjacent forest patches

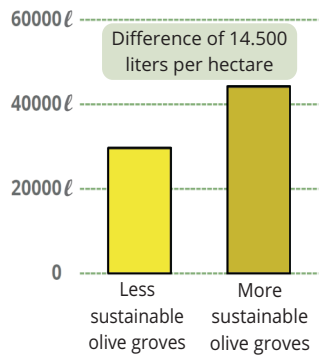


Average amount of organic matter in topsoils of the Spanish experimental plots of SUSTAINOLIVE compared to that of some adjacent forest patches (expressed in tons per hectare)

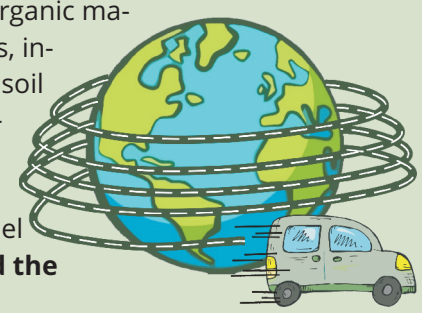


Liters of diesel equivalent to the amount of energy contained in the SOM (one hectare and top 30 cm).

One gram of SOM has been estimated to contain 4,7 kilocalories.



According to our results, long-term sustainable management practices that improve the level of organic matter in the topsoil of olive groves, increase the energy stored in the soil compared to less sustainable olive groves in an amount equivalent to **14.500 liters of diesel per hectare**. That amount of fuel would allow **a car to go around the world 4,3 times**.



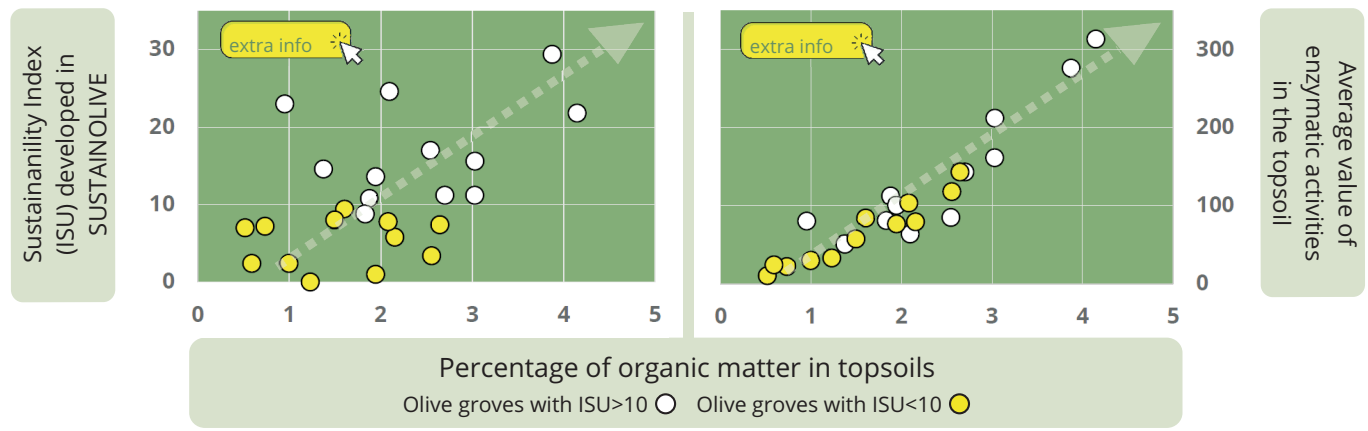
ITS FUNCTIONS

- ✓ It provides nutrients that remain available to plants and soil microflora — extra info
- ✓ It increases the water retention capacity in the soil
- ✓ It increases soil porosity and so improves aeration, the ability of water to penetrate and the volume of soil that roots can explore
- ✓ It improves soil structure, preventing its compaction and so the formation of the dreaded work sole
- ✓ It helps mitigate soil erosion — extra info
- ✓ It helps to buffer against variations in soil acidity and temperature

KEEP IN MIND THAT...

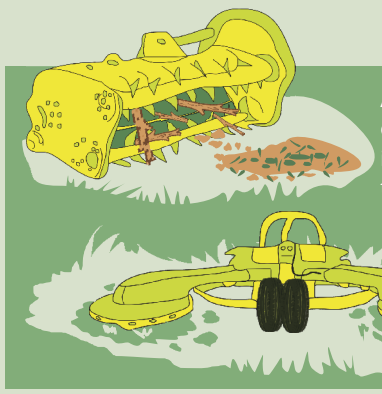
although an optimal level can be established for each type of soil and climate, **a fall in the SOM content of a topsoil below 2%** should set the alarm bells ringing.

Some relevant correlations observed in the Spanish experimental olive groves of SUSTAINOLIVE



The greater the diversity of management practices that increase the organic matter of the topsoil, the greater the sustainability of the olive grove (graph on the left). The contribution of organic matter leads to an increase in the availability of carbon that positively affects the activity of the soil microorganisms (graph on the right), which means that **olive trees have access to a greater amount of nutrients thus reducing the requirement for chemical fertilizers.**

WHAT ARE SUCH PRACTICES ?



Add the **shredded remains of pruning** to the soil instead of burning them

Add **manure or composted olive mill pomaces** to the soil instead of chemical fertilizers

Plant **intercrops** in the inter rows among olive tree lines, being aromatic plants for honey production a good option

Substitute intensive tillage by **minimum tillage** and add **waste from cover crop clearing** onto soils, in substitution of maintaining bare soils

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