

HORIZON EUROPE
MISSION AREA SOIL HEALTH & FOOD

What do you know about soil?



Research and
Innovation

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Mission Area: Soil health and food

Healthy soils are essential for our life and that of future generations. Soils form the skin of the earth and are fundamental for all life-sustaining processes on our planet.

Partly inspired by the Apollo 11 mission to put a man on the moon, **European research and innovation missions aim to deliver solutions** to some of the greatest challenges facing our world. They are an

integral part of Horizon Europe, the next EU research and innovation programme (2021-2027).

A mission in the area of soil health and food will mobilise resources and people (e.g. researchers, land managers, public authorities, business and citizens) to engage in activities for soil restoration, as this is **the basis for healthy people and a healthy planet**.

And you?
What do you know about soils?
Let's play together!

Find out more





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Soils form the skin of the earth are essential for all life-sustaining processes on our planet. What are their physical components?



- a organic matter, air, water, mineral matter
- b organic matter and mineral matter
- c air, water and organic matter



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What are the vital functions performed by healthy soils?



- a Provision of food, fibre, wood and other materials;
- b purifying water, preventing floods and droughts;
- c hosting biodiversity;
- d recycling nutrients essential to our ecosystems;
- e storing carbon
- f all the functions mentioned above





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How many living organisms (microorganisms) can you find in a handful of soil?



- a There is none
- b More than 10 billion
- c Between 5000 and 10000. It depends on the type of soil.



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Can healthy soils help to mitigate climate change?



- a No, they have no impact on climate
- b We don't know, more research is needed to understand the relationship between soil and climate.
- c Yes, they can capture carbon and therefore reduce greenhouse gas emissions into the atmosphere





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What percentage of our food comes directly or indirectly from the soil?



- a Less than 50%
- b Almost 70%
- c More than 95%



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Sustainable soil management can increase agricultural crop yields by



- a 30%
- b 53%
- c 58%





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How long does it take to create one cm of fertile soil on average?



- a Hundreds to thousands of years
- b A few months
- c 50 - 100 years



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Globally, what is the percentage of degraded soils and therefore no longer available for food production?



- a 33%
- b 50%
- c 12%





Erosion of soils caused by water is one of the most common forms of soil degradation in Europe. What percentage of the total area of Europe (excluding the Russian Federation) is affected by this phenomenon?

.....



- a About 33%
- b About 16%
- c About 25%



When is World Soil Day celebrated?

.....



- a 4 January
- b 6 June
- c 5 December



QUIZ ANSWERS

- 1 **a Organic matter, air, water, mineral matter**
Soils are composed by an average of 5% organic matter, 25% air, 25% water, 45% mineral matter.
- 2 **f All the functions mentioned above**
- 3 **b More than 10 billion**
Soil is a living organism: the decomposition processes are carried out by micro-organisms found in the earth. You can have more microorganisms (like bacteria, insects, spiders, worms, etc.) in a handful of soil than humans on the planet! Protecting and restoring soil health is therefore fundamental to safeguarding biodiversity.
- 4 **c Yes, they can capture carbon and therefore reduce greenhouse gas emissions into the atmosphere.**
Healthy soils are the largest carbon storage on Earth. When managed sustainably, soils can play an important role in mitigating climate change, by storing carbon (sequestration) and reducing greenhouse gas emissions into the atmosphere. However, if the soil is poorly managed, soil carbon can be released into the atmosphere as carbon dioxide (CO₂), thereby contributing to climate change.
- 5 **c More than 95%**
Almost all of our food comes from soil. We need healthy soils for safe and nutritious food.
- 6 **c 58%**
Methods that take soil health into account can increase average crop yields by 58%. This includes farming practices based on principles of low or no till, high vegetation cover, crop diversity, and low input with regard to pesticides and fertilisers.
- 7 **a Hundreds to thousands of years**
Depending on the type of soil, topography, climate, vegetation, etc., it can take up to 1000 years to produce 1 cm of soil. Soils that are lost because of degradation processes (such as erosion or pollution) need hundreds or thousands of years to be regenerated. From a human perspective, soils are considered as non-renewable resources. So it's very important to protect this scarce and valuable resource.
- 8 **a 33%**
About 1/3 of soil is no longer available for food production. Soils become degraded due to erosion, salinization, compaction, acidification, contamination or leaching of nutrients. Land degradation can result in food shortages, higher prices for food and other raw materials, and the destruction of ecosystems.
- 9 **b About 16%**
The Mediterranean region is particularly affected by soil erosion caused by water, because periods of drought are followed by intense rains on steep slopes with fragile soils. In northern Europe, this type of phenomenon is less pronounced because erosion through rain is less intense and because there is a higher vegetation cover.
- 10 **c 5 December**
On 20 December 2013, the Sixty-eighth General Assembly of the United Nations proclaimed 5 December, 2014 World Soil Day and 2015 as the International Year of Soils. This day is your opportunity to take action at local level – in schools, gardens, cities and rural communities...!



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