

Why and how to assess soil biodiversity

Why is soil biodiversity important?

Soil below our feet is teeming with life – we call it soil biodiversity. This includes an incredible variety of organisms, from tiny bacteria and fungi to insects and earthworms. Healthy soils are living soils!

Soil biodiversity powers sustainable farming and a resilient environment:

Natural Fertiliser & Nutrient Boost:

Soil organisms are nature's recyclers, decomposing residues and releasing essential nutrients plants need. Most plants work with symbiotic fungi to access nutrients. This reduces reliance on chemical fertilisers.

Carbon storage:

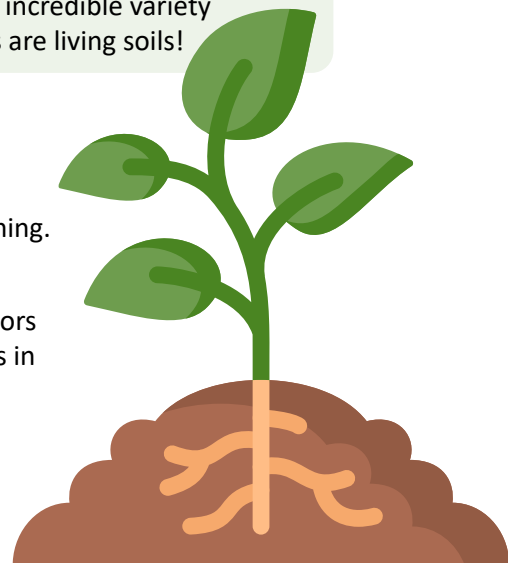
Soil organisms accumulate organic carbon in soil, reducing climate warming.

Natural Pest & Disease Control:

Beneficial microbes and small predators keep harmful crop diseases and pests in check, reducing pesticide use.

Stronger Soil, More Water:

Earthworms and soil insects are “ecosystem engineers” that create channels, improving water flow and root growth, while fungi and bacteria bind soil particles, preventing erosion and helping soil hold moisture.



Why Monitor This Hidden Life?

Monitoring soil biodiversity is important because only living, healthy soils deliver the services that sustain our planet and human wellbeing. This requires a good balance between soil physical, chemical and biological properties. Soil degradation from erosion, pollution, or poor land management practices can threaten soil life.

How Do We Assess Soil Biodiversity?

Understanding this complex underground world requires a range of tools. For microscopic life, we use DNA sequencing. Larger organisms like earthworms and insects are counted by direct observations or trapping techniques.

What is the SOB4ES project doing?

This project uncovers who lives in the soil and how they respond to different farming methods and land uses. We need to know what healthy soil biodiversity should be like.

The project also improves ways to check the health of our soils by developing better measurement methods of soil life. Using cost-effective “indicators” of soil biodiversity will help track changes and advise on better land management across Europe.

The project will bring the amazing story of soil biodiversity to everyone – farmers, policymakers, and citizens. Through workshops and easy-to-understand information, we want to show how vital soil life is.



Researchers counting earthworms and insects in soil samples.



Researchers working in an Atlantic grassland landscape. To assess soil biodiversity, several samples must be taken from the same site because organisms are not distributed evenly.

Some soil organisms are large and a thing of unexpected beauty, like this earthworm that has the scientific name *Lumbricus friendi*. The thicker orange area, near the head, is called the saddle or clitellum and shows that this is a mature worm.



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