Living Soils

Comprenez la vie biologique du sol (vers, champignons, bactéries, humus) et comment le système des planches permanentes nourrit naturellement vos cultures.



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We are going to show you how cultivation beds help keep the soil alive to ensure the good health

and growth of plants and vegetables.

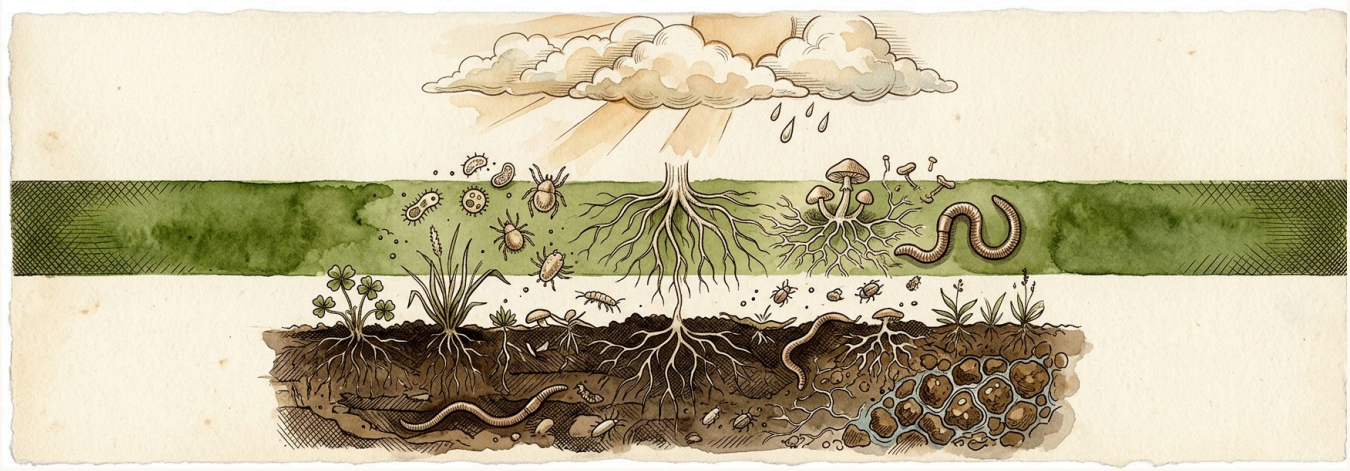


FOR SOIL TO BE FERTILE, IT MUST BE ALIVE

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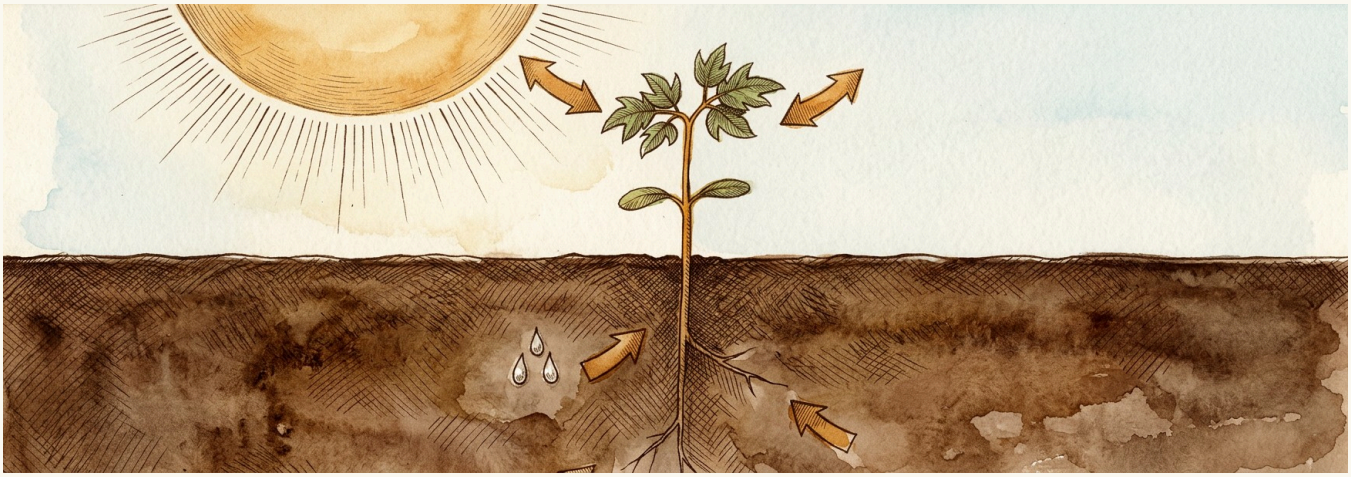
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For growth and good health, vegetable plants need light, water, and nutrients. They feed in the upper part ...



For growth and good health, vegetable plants need light, water, and nutrients. They feed in the upper part of the

soil (between 10 and 20 cm deep).



Fertile soil is rich in humus, which comes from decomposing organic matter (crop residues, leaves, dead insects,

excrement...).



Humus

Fertile soil is rich in humus, which comes from decomposing organic matter (crop residues, leaves, dead insects, excrement...).

The soil consists of:



The soil consists of:

solid elements such as organic matter and stones,

water containing minerals,

and air.

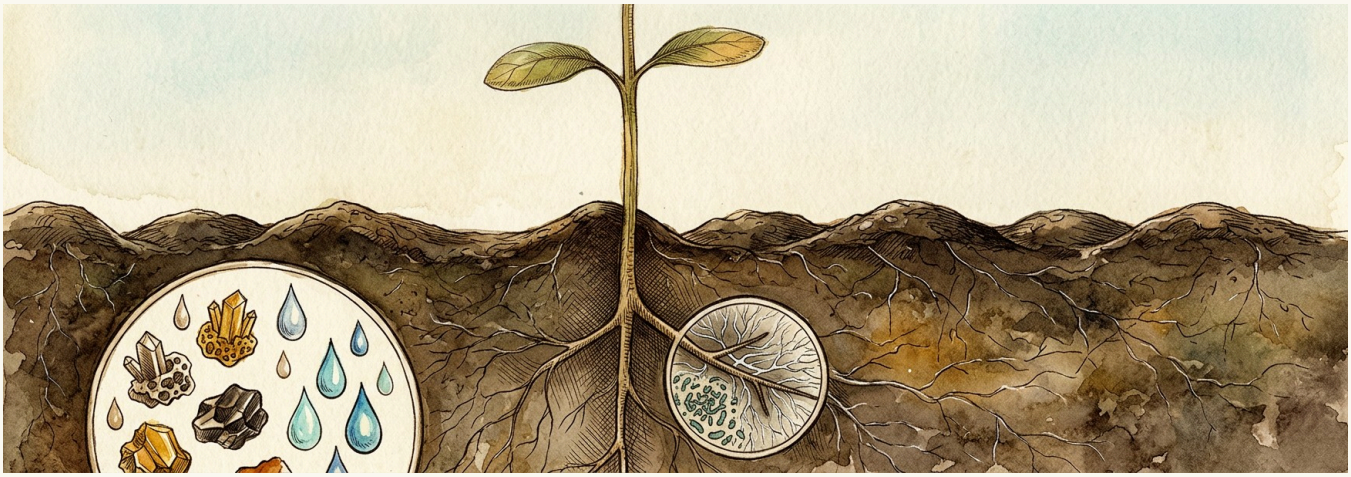


mycelium

bacteria

It also hosts living organisms :

invisible microorganisms like bacteria and fungi with white filaments, called mycelium.



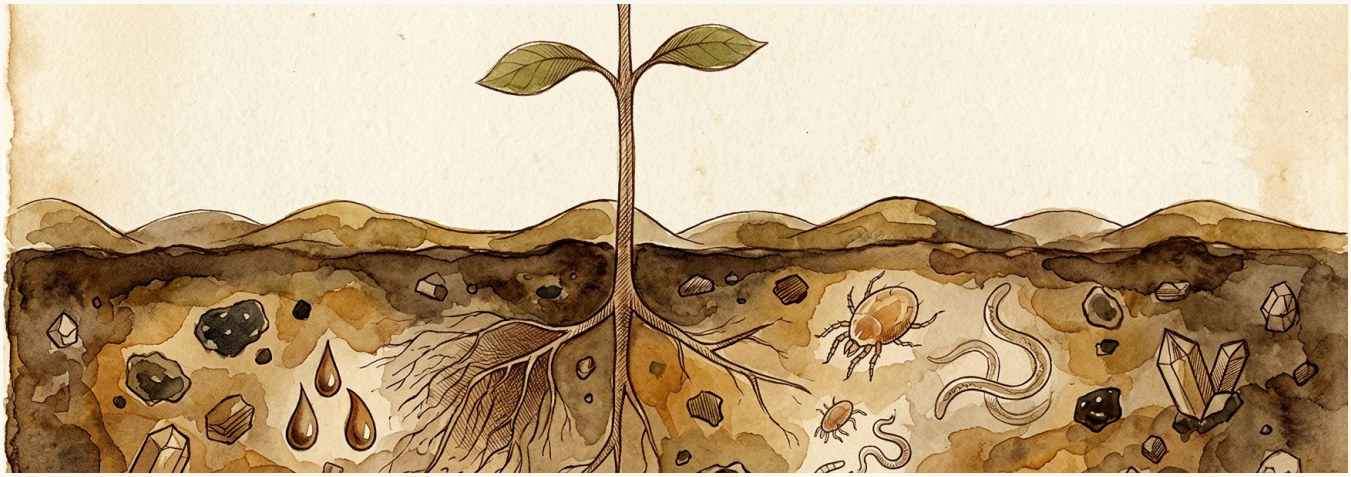
mites

nematodes

larvae

It also hosts living organisms :

organisms a few millimeters in size like mites, small worms (called nematodes), or insect larvae.



termites

earthworms

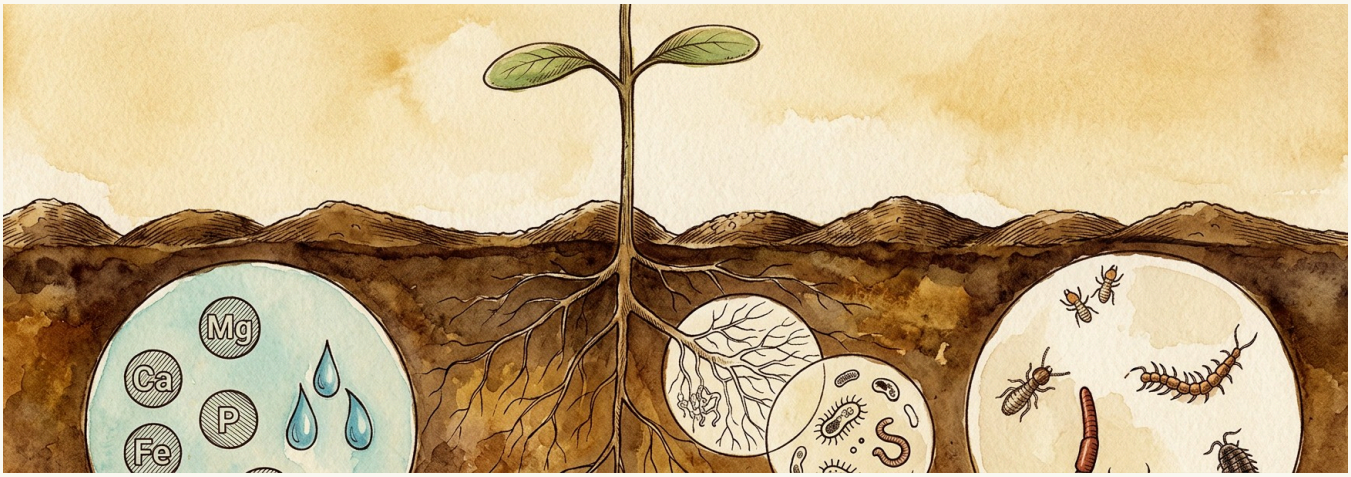
millipedes

woodlice

spiders

It also hosts living organisms :

and insects : such as woodlice, earthworms, termites, ants, millipedes, or spiders.



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All these elements interact together to regenerate the soil, keep it healthy, moist, aerated, and stable to support

plant growth.

This biological activity is the engine of soil fertility.



HOW DOES THE CULTIVATION BED SYSTEM MAINTAIN

LIVING AND THEREFORE FERTILE SOIL?

Initially, the plot is covered with a thin layer of fertile soil. By digging the walkways, this soil is moved ont...



Initially, the plot is covered with a thin layer of fertile soil. By digging the walkways, this soil is moved onto the beds.

This concentrates all the fertile soil where the plants will grow.

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15

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This concentrates all the fertile soil where the plants will grow.



The role of mulching

Mulching in the walkways is essential :

It retains water like a sponge, keeping the soil moist.

It slows down the flow of water during heavy rain, which limits erosion.

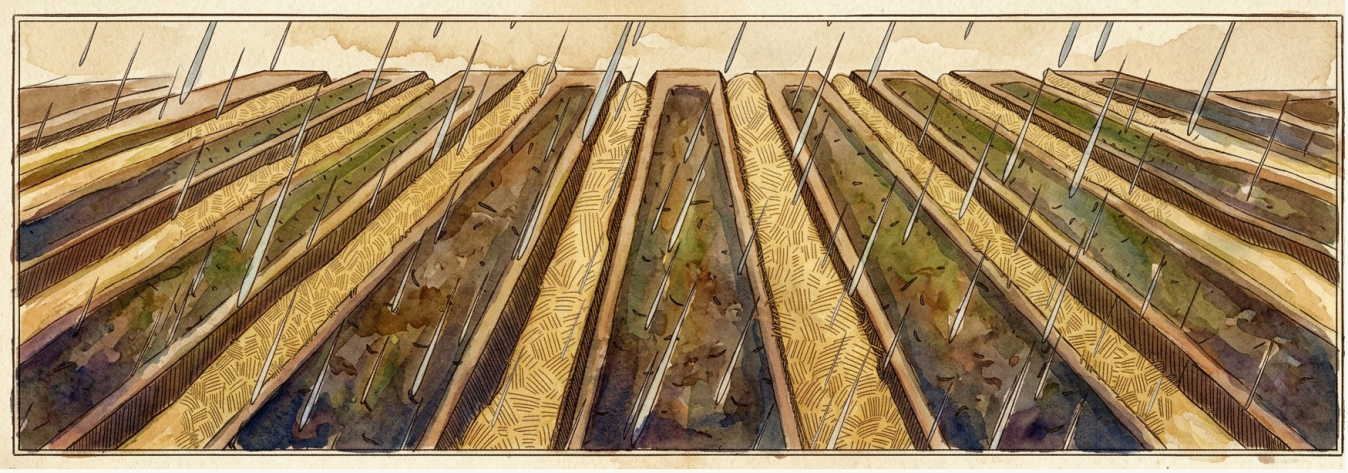


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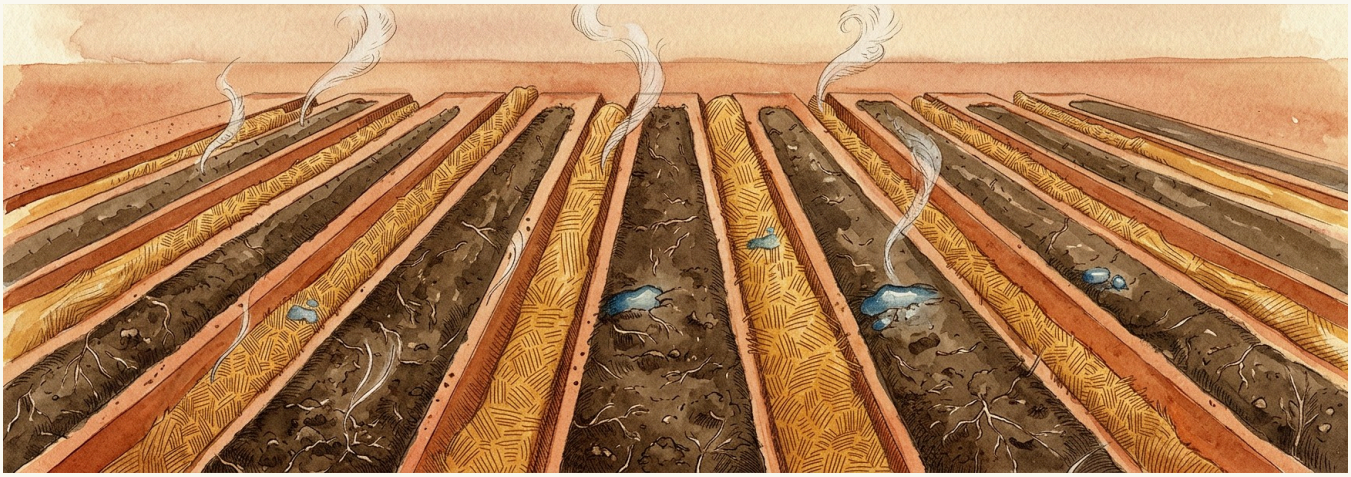


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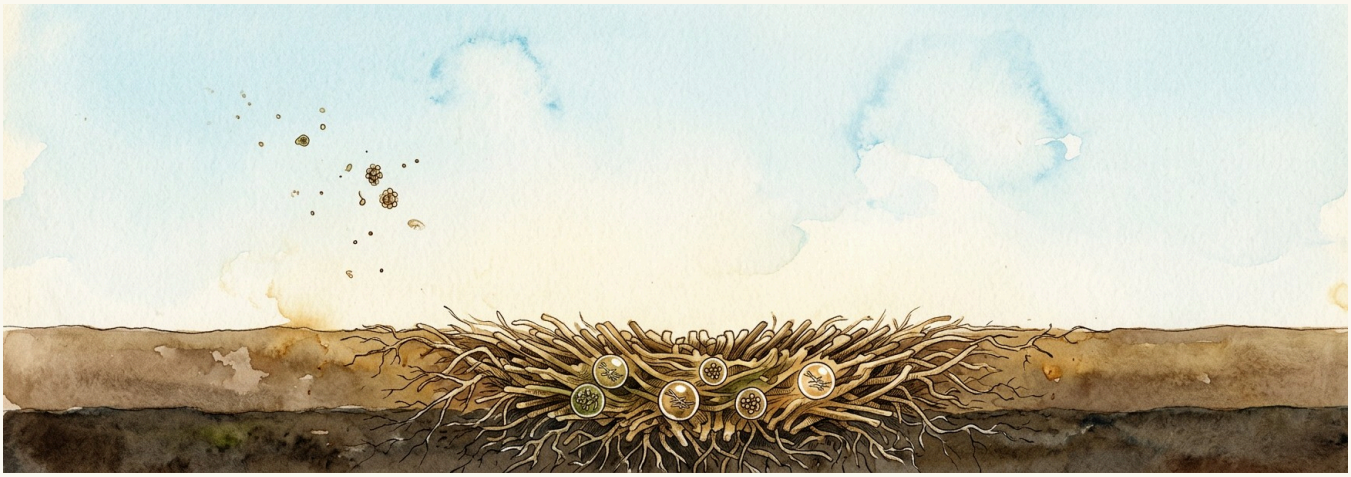
It slows down the flow of water during heavy rain, which limits erosion.



The role of micro-organisms and

insects

Microorganisms (bacteria and filamentous fungi) feed on the mulch.



The role of micro-organisms and

insects

They become food for woodlice, insects (termites, spiders, millipedes...) and earthworms.



The role of micro-organisms and

insects

All these organisms participate in the decomposition of the mulch into compost. We can thus speak of surface compost in the walkways. The excrements and corpses of microorganisms and insects decompose and in turn nourish the compost.



The role of micro-organisms and

insects

By digging tunnels, earthworms and termites also facilitate the circulation of air and water and help the roots of plants find their way.



The role of micro-organisms and

insects

The decomposition of organic matter releases mineral elements that add to those already present in the soil and

essential for plant growth.



The role of micro-organisms and

insects

Nitrogen promotes the development of leaves, phosphorus that of roots, potassium acts on fruit-vegetables, but

also calcium, magnesium, iron, and other trace elements, essential for good growth and health of the plant.



HOW DO PLANTS ALSO CONTRIBUTE TO THE

BIOLOGICAL ACTIVITY OF THE SOIL AND PROTECT IT ?



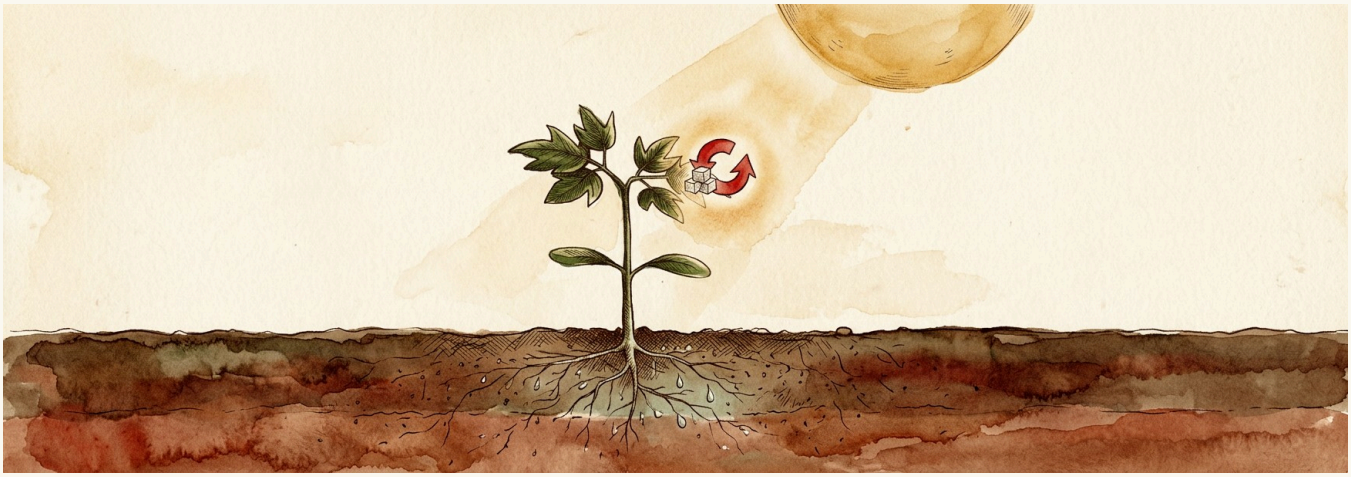
Once the plants have grown they protect the soil from the sun and wind.

Once the plants have grown they protect the soil from the sun and wind.



PHOTOSYNTHESIS

The upper part of the plants interacts with light. The photosynthesis reaction produces sugar that will feed the fungi and bacteria in the soil.



In exchange for the sugar it provides, some fungi act as a mouth for the plant: they absorb soil elements on its

behalf. This win-win relationship is called a symbiosis. When it is established between a plant and a fungus, it is

then called mycorrhiza.



Plants benefit from the water and nutrients stored in the walkways. To access them, they expand their root

system. The roots stabilize the soil, protect it from erosion, and leaching by heavy rains.



Once the harvest is over, the roots remaining in the soil decompose and contribute to enriching the soil with

organic matter that will feed the microorganisms. In some crops, the roots can reach several kilometers long: the

organic matter they bring in decomposing is therefore not negligible !

Harvest residues provide organic matter. Depending on the amount, it can be added either to our compost...



Harvest residues provide organic matter. Depending on the amount, it can be added either to our compost bin to

obtain compost or under the mulch of the walkways for surface compost.

33

Before starting a new crop, this compost can be laid on the surface without being compacted, to not dama...



Before starting a new crop, this compost can be laid on the surface without being compacted, to not damage the

soil structure and let life organize itself.

X3



X3

The technique of intensive organic gardening in living soil with permanent beds and mulching improves soil fertility while tripling the production of vegetables compared to conventional methods.



The cultivation bed technique has many advantages: by preserving the soil, it allows for a reduction in inputs of

compost and organic matter, thus saving money, while increasing productivity and producing healthy food.