

## **Soil builders: a rich yet misunderstood biodiversity**

We are all very aware of the importance of the soil in a kitchen garden. Without good quality soil, it is difficult to yield a good harvest without using chemical plant protection products. A soil that lacks nutrients is not a gardener's only fear: a shrinking biodiversity (particularly when using pesticides, fungicides and other chemical products) can be catastrophic for crops.

That is because under our feet, a multitude of creatures go about making the soil, which is so dear to us, of a better quality. Without this biodiversity, the soil would die. As an inert material, soil needs this fauna to regenerate itself. So, you ask yourself, who are these soil builders?

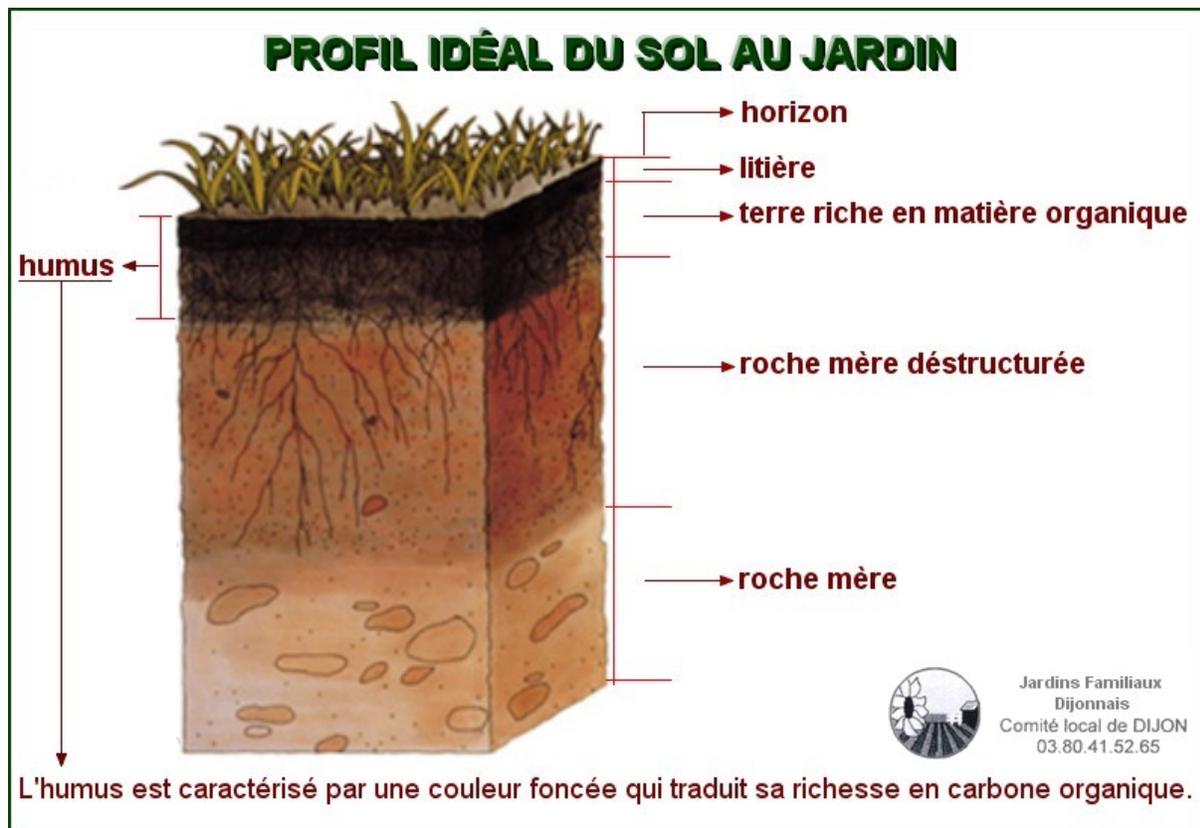


### **What is soil?**

In pedology (the science of studying soil), the soil is not only studied in terms of composition, but also life, as one cannot exist without the other. **From the biodiversity present comes the chemical composition, the quality, and from this quality comes the biodiversity.** Hence, soil works in a cycle, which results in its strength and its weakness at the same time.

**In his “Guide to the experimental study of soil”, Albert Demolon, a pedologist, defines the soil as the following: “the natural formation of ground, with a moveable structure and varying weight, resulting from the transformation of the underlying bedrock due to various processes – physical, chemical and biological – in contact with the atmosphere and living creatures.”**

Without going into detail on the soil's composition, as here we are more interested in the soil's biodiversity than its composition, we can nevertheless have a simple overview.



Biodiversity has an essential role in the soil's fertility, the protection of species, the battle against soil erosion, good drainage of resources or nutrients by water, and can even play a role in decontamination.

### **But what is soil biodiversity made of?**

Soil biodiversity can be divided into four families:

- Mega fauna found on the surface: toads, snakes, moles...
- Macro fauna, visible to the naked eye: earthworms, ants, larvae...
- Mesofauna, visible under a magnifying glass: mites, springtails...
- Micro fauna, visible under a microscope: protozoa, nematodes, fungi, bacteria, algae...



Each of these families has a specific role in the soil's structure. The macro fauna that gardeners know well, such as earthworms or ants, are known as “**physical engineers**”, that's to say that they are in charge of the soil's renewal: they build habitats for other organisms in the soil, and are responsible for spreading organic matter and good water distribution.



Mesofauna play the role of **“regulator”** with regards to the population of microorganisms living in the soil, and so are predators that can save our crops from various diseases linked to having too many fungi or bacteria in the soil. These micro-organisms that make up the mesofauna are the **“chemical engineers”** of soil. They are in charge of decomposing organic matter, thereby supplying nutritional elements. They are also capable of attacking some pollutants.



### **How do you promote this biodiversity?**

- Avoid ploughing the soil

How many gardeners use a tiller in their gardens? Far too many. We know that as gardeners grow older, working the soil becomes very difficult, but did you know that if you do it right, your soil will rediscover its balance and you won't have to work so hard to have loose soil? What's more, when you use the tiller too deep, you can dislodge species from their natural habitat, so everything will be upside down and nobody will be able to find where they are. That's without considering the death of many worms and other creatures. Remember, an earthworm cut in two inevitably dies.

- Balance the amount of organic materials

Gardeners like us know that it is important to watch the amount of organic materials (such as compost, for example). As well as bringing nutrients thanks to the biodiversity in them, it also allows us to protect our soil and thereby improve its ability to retain water.

- Don't use chemical products. With us, it's all biological!

We can never repeat it too often: stop using chemical plant protection products. The biodiversity that maintains and works your soil will never thank you enough for it, and your crops will never look better. These days there are many biological solutions to help you fight against potential invasions or infections.

- Use green manure to minimise erosion

Bare soil is sensitive to all kind of things, notably the weather, whether it is rain, wind, drought, etc. In the growing season, don't skimp on ground covers and mulching. As well as conserving the soil's heat, these covers will allow water to be conserved for longer. In periods of drought like last year where the rain gauge remains low, this will give the garden a helping hand.

If you decide to leave a flowerbed bare in a less prosperous period or in case of absence, don't hesitate to use green manure (e.g vetch, mustard, etc.) which will nourish and protect your soil and will ultimately act as ground cover for your other crops.

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