



**Recruiting Soil to Tackle
Climate Change:**
A Roadmap for Canada



Conseil canadien du
COMPOST
Council of Canada



Principles of Soil Health FAQs

What are the “principles of soil health”?

The principles of soil health provide the basic rules for good soil management. Collectively, they ensure a substantial flow of carbon to the soil and protection and enhancement of the *soil food web* (see backgrounder for more detail on the underground world of soil organisms). Our five principles are:

- Keep live roots in the ground year round
- Minimize soil disturbance
- Optimize inputs
- Promote diversity
- Ensure soil remains covered

Where do the soil-health principles come from?

Principles for creating and sustaining healthy soils have been developed and refined over the past decade by both academic and on-the-ground practitioners. Perhaps the [most well-known set of principles](#) are those developed by the Natural Resources Conservation Service (NRCS), a branch of the United States Department of Agriculture (USDA). Our team adopted the NRCS principles and added one more (Optimize inputs), which we felt was on a similar level of importance.

How do the soil health principles increase carbon levels in soils?

- **Live roots in the ground.** Live roots release sugars and other carbon-rich substances, which feed microbes, but can also build up in soils. In fact, the majority of carbon sequestered in soils comes from plant roots, rather than plant residues. The more live roots, the more carbon.
- **Minimize soil disturbance.** Tillage, digging, and other soil disturbances disrupt networks of soil fungi, important for soil structure. Fungi bind soil particles into aggregates (clumps). These clumps not only give the soil its structure, they are also the “engine rooms” of carbon capture.
- **Optimize inputs.** Plants need nutrients to thrive. However, we should apply nutrients carefully, as in the 4Rs program, in order to enhance, not replace, natural fertility. Compost is another way to add nutrients (and organic matter) while respecting the soil food web and its functions.
- **Promote diversity.** Diversity above ground (e.g., cover crops, rotations) leads to diversity below ground (many species). When temperature or moisture fluctuates, diversity ensures that microbes adapted to these new conditions will go to work, building soil and feeding crops.
- **Ensure soil remains covered.** Cover crops, mulches, etc. prevent carbon loss through erosion. They also protect the habitat of soil organisms, moderating temperature and moisture, and allowing our underground allies to continue their good work through all seasons of the year.

How are these principles put into practice? A growing number of farmers and other soil managers have adopted new soil-building practices, and some have adapted older ones. These practices put the soil-health principles into practice. See the backgrounder on *Soil Health Practices* for some good examples.