

# Building Healthy Soil

## What is it?

Many areas in Cincinnati have a high concentration of clay soil particles. Clay soils can feel like a challenge to gardeners, but can be improved through thoughtful action. While clay can be beneficial in its nutrient and moisture holding capacity, it is important to add organic material to improve water and air flow, and to adjust the pH when necessary. Healthy, vibrant plants and gardens are generated by the soil they are growing in, so building healthy soil is the first step to a successful garden.

## Why do it?

In nature, soil exists as a dynamic system of water, air, minerals, decaying plant and animal parts, microscopic organisms, insects and worms, bacteria, fungi and rodents. These components contribute to a balanced soil that:

- Hold water
- Contains nutrients to enliven plant life
- Drains well
- Recycles dead plants and animals through decomposition.



## How to get started

Good soil is between 25-50% porous air space. This space is achieved by adding organic matter, which creates an environment where millions of tiny animals make their way through the earth, building tunnels, churning and aerating the soil as they go. This can be replicated in the vegetable or perennial flower bed by using the following strategies:

- Return all disease-free crop wastes to the soil: lay them down after cutting and to improve the appearance cover with leaves or compost)
- Compost in-place, or sheet compost, can be used to build new garden beds or improve the soil in existing beds. If building over grass, lay down a layer of overlapping corrugated cardboard or newspaper (5 layers). If you wet the cardboard or paper it will stay in place while you layer materials on top of it. Top with layers of dry and fresh materials, making dry layers about 3 times as deep as fresh layers. Make the pile about 2 feet high and then top with finished compost or top soil. As worms and other critters move from the native soil into the sheet compost area they will improve the soil. A sheet compost started in the fall will be ready to plant the following spring.
- Loosen soil with a digging fork then cover with compost or organic matter, like shredded leaves or aged grass clippings.



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## Key Factors to Consider

- Minimize tilling to maintain the structure of the soil that is built over time through the addition of organic matter and decomposition. Deep tilling brings weed seeds to the surface and disrupts the soil aggregates (or “chunks”) that have been built over the years.
- Use a three year rotation schedule for a vegetable garden to follow heavy feeding plants by light feeding plants, and also to keep pests and diseases from inhabiting plants year after year. See *The New Organic Grower* by Elliot Coleman for lists of plant families and rotation schedules. If you are gardening in a small raised bed or container, rotation is difficult and regular applications of compost and fertilizer should be made.
- Plant green manure: a crop that is grown and then cut and mixed into the soil to increase soil fertility and organic matter content. Green manure crops can be planted throughout the growing season.
- Plant a cover crop: a crop grown to protect and enrich the soil, or to control weeds, usually done late in the season.
- Use organic soil additives, if needed, after getting results from a soil test:

**Rock Phosphate:** a good source of phosphorous and calcium

**Greensand:** an undersea deposit from the ocean, greensand is a good source of potassium and helps plants produce better fruit; it also contains micronutrients that are very important to proper plant development

**Liquid Seaweed:** a good “all-around” fertilizer for boosting vegetables or flowers

**Lime:** helps reduce the acid level in soils (not needed in the southern Ohio region)

**Fish Emulsion:** another good “all-around” fertilizer which provides nitrogen and phosphorous

**Blood Meal:** dried blood in a powder form, high in nitrogen; it aids growth of bacteria in your soil

**Animal Manure:** aged at least six months to a year before adding it to soils or compost in order to give it a chance to “burn off” the ammonia that is found in fresh manure.

## Local Resources

- Hamilton County Soil and Water Conservation District for soil testing and other information: [www.hcswcd.org](http://www.hcswcd.org)
- Northside Grange in Cincinnati, source for organic soil amendments and cover crops [www.northsidegrange.com](http://www.northsidegrange.com)
- Local garden centers often carry a wide range of soil amendments

## Recommended Reading

- *Rodale's All-New Encyclopedia of Organic Gardening: The Indispensable Resource for Every Gardener* by Fern Marshall Bradley, Barbara W. Ellis
- *Start with the Soil* by Grace Gershuny
- *Teaming with Microbes* by Jeff Lowenfels and Wayne Lewis
- *The Soul of Soil* by Joe Smille and Grace Gershuny

