



### Organic and Sustainable Gardening

April 9, 2019

#### Soil

The acclaimed agrarian writer, poet, and farmer Wendell Berry once admonished humanity in one of his poems to **“Put your faith in the two inches of humus that will build under the trees, every thousand years.”**

Topsoil forms at the rate of a couple of inches per century. We use it up in the short span of just a few harvests. Topsoil forms from the accumulation of leaves, fallen branches, the dead bodies of insects, and other organic material that is slowly broken down by a community of billions of unseen workers. Healthy topsoil is never a finished product, but rather a continual creation that stems from relationships of mutual benefit from organic material and the microscopic soil life.

Although it makes up only 3–5% of the soil, organic matter has a pronounced influence on all soil properties. When added to the soil, it yields:

- A sufficient nutrient supply
- An open, permeable soil surface that allows air/gas exchange to replenish the soil’s oxygen content, and makes it easy for water to enter, percolate through, and drain out of the root zone.
- A “feedstock” to nourish microbes
- A low population of soil-borne plant diseases and pathogens
- A high population of beneficial soil microorganisms
- Good soil consistency, that is, the ability to resist degradation (compaction, erosion,)
- Good tilth, which refers to the “workability” of a soil

Test your soil with a test from your local hardware/gardening shop or by working with your local agriculture extension office. Unibest is a good local resource: [www.unibestinc.com](http://www.unibestinc.com)

**Reclaiming old, overspent or neglected soil on a small scale – Lasagna gardening.** Start with thick layer of cardboard or newspaper then layers of browns (dried leaves, straw) alternating with layers of green (kitchen scraps, manure, coffee grounds, yard waste) in place by October, plant into it in the spring.

<https://permaculturenews.org/2017/08/11/lasagna-gardening-build-soil-get-rid-weeds/>

<https://casfs.ucsc.edu/documents/for-the-gardener/soil-primer.pdf>

**Reclaiming old, overspent or neglected soil on a large scale** – Clear it of trees, shrubs and rocks; plant manure crops (rye grass, legumes, mustards, buckwheat); rotate crops; add organic matter (manure, cover crop or compost) every year.

<https://www.almanac.com/content/reclaiming-your-garden-soil>

## **Crop rotation**

Crop rotation is a systematic approach to deciding which *crop* to plant where in your vegetable garden from one year to the next. The goals of *crop rotation* are to help manage organic soil fertility and also to help avoid or reduce problems with soil-borne diseases and some soil-dwelling insects, such as corn rootworms. A crop rotation will cycle through cash crops (such as vegetables), cover crops (grasses and cereals) and green manures (often legumes). The exact sequence of crops will vary depending on local circumstances, with the critical design element being an understanding what each crop contributes and takes from the soil. For instance, nitrogen depleting crop should be preceded by a nitrogen fixing crop.

- Improved soil fertility and structure
- Disease control
- Pest control
- Weed control
- Increased Soil Organic Matter
- Erosion control
- Improved biodiversity
- Increased yield
- Reduced commercial risk

<https://permaculturenews.org/2016/06/15/crop-rotation-a-vital-component-of-organic-farming/>

## **Organic amendments**

Effective microorganisms, compost, cover crops, manure (aged), mineralization:

<https://permaculturenews.org/?s=organic+amendments>

## **Companion planting**

<https://permaculturenews.org/2010/07/30/companion-planting-guide/>

<http://www.urbanorganicgardener.com/2014/04/urban-organic-gardening-companion-planting-chart/>

## **Seed saving:**

<https://www.seedsavers.org/how-to-save-seeds>

## **Beneficial insect attraction**

- Use a wide variety of attractive plants. Plants that flower at times of the year can provide beneficials with nectar and when they need it.
- Plantings that are at least 4' by 4' (1.2m x 1.2m) of each work best at attracting beneficials.
- A bird bath or backyard water feature not only attracts birds predator of insects), but also attracts beneficials.
- Tolerate minor pest infestations. The beneficial insects will get the memo before you do. This will provide another food source for the beneficials and help keep them in your yard.
- More information about beneficial predatory insects: "*The Natural Enemies Handbook*", from the University of California Division of Agriculture and Natural Resources.



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pollen  
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<https://permaculturenews.org/2014/10/04/plants-attract-beneficial-insects/>  
<http://extension.wsu.edu/publications/pubs/em067e/>  
<https://crownbees.com/>

### **Mechanical and natural or organic pest control for pests:**

<https://pubs.wsu.edu/ListItems.aspx?Keyword=natural%20insecticides>  
[https://casfs.ucsc.edu/documents/for-the-gardener/snail\\_control.pdf](https://casfs.ucsc.edu/documents/for-the-gardener/snail_control.pdf)  
[https://casfs.ucsc.edu/documents/for-the-gardener/gopher\\_control.pdf](https://casfs.ucsc.edu/documents/for-the-gardener/gopher_control.pdf)

### **Mechanical and organic pest control for weeds**

Trowel and shovel, tiller, hoe, halo hoe, mulch, fabric mulch, plastic mulch, vinegar, cardboard/newspaper

### **Composting and/or Vermicomposting**

It is unbelievably easy – just follow some basic guidelines:

<https://www.epa.gov/recycle/composting-home>  
[www.amazon.com/Worms-Eat-My-Garbage-Composting/dp/0977804518](http://www.amazon.com/Worms-Eat-My-Garbage-Composting/dp/0977804518)

### **Growing your own starts:**

- Save and re-use growing pots, save plastic food containers like cottage cheese or yogurt containers with punch holes in the bottom to plant starts.
- Use older seeds – test viability in between wet paper towel, in a plastic bag, on a plate in a sunny window.
- Plant many/pot and separate after the true leaves have developed
- Use an electric heating pad under heat loving plants (pepper/tomato) – careful with the water
- Transfer to bigger pots and to the garden at the appropriate time.

### **Garden planting methods**

To reduce weeds and increase yields:



Hexagonal spacing



Traditional spacing