

Facts to Consider

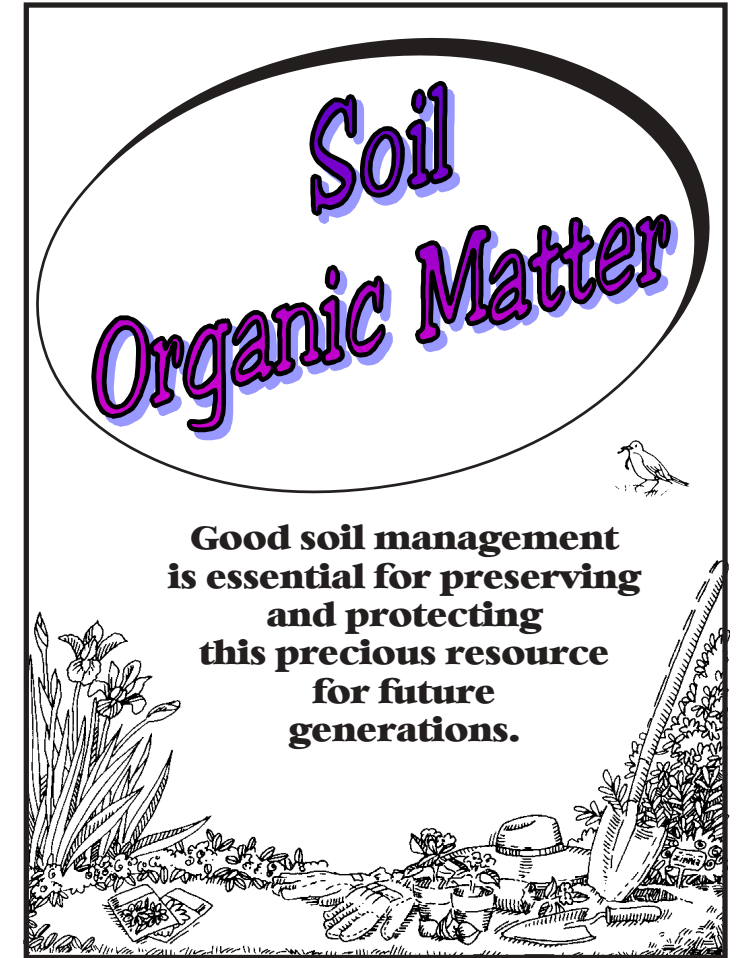
- ☐ **Sandy Soils** need large amounts of organic matter to help hold water and nutrients within the range of plant roots.
- ☐ **Clay Soils** need substantial applications of organic materials to open channels for aeration and drainage. 
- ☐ **Loamy Soils** need regular infusions of organic matter to maintain their already excellent structure and to add fertility.
- ☐ **Organic Matter** generally contains fewer nutrients than commercial fertilizers but it releases its nutrients over a longer period of time.
- ☐ **Best organic amendments** include compost, aged (at least one year) barnyard manure, chopped up leaves and yard waste.
- ☐ **Not Permanent** — Organic matter can not be built up permanently in the soil because it continually decomposes and gets used up; soil building must be a continual process in a garden.
- ☐ **Microorganisms** are responsible for most organic matter decomposition and work best when the pH level is in the range of 6.0 to 7.0.
- ☐ **Humus** is a dark-colored substance consisting of partially or wholly decayed plant or animal matter.
- ☐ **Extra Nitrogen** may be needed when wood chips, sawdust or straw decomposes. Woody products take up nitrogen as they break down.
- ☐ **Consider Using** coarse wood chips for paths, small wood chips under trees and shrubs and shredded bark around flowers.
- ☐ **Green Manure Crops** serve several purposes: roots open soil passageways helping air and water movement, top growth provides organic matter when tilled under and blooms provide excellent forage for bees.

Make Your Own Compost

- ☐ **What is compost?** It's the dark, crumbly, and earthy-smelling form of decomposing organic matter. 
- ☐ **Why make compost?** It reduces your household garbage, is good for your soil and helps our environment.
- ☐ **How can I use compost?** Use it to enrich your flower and vegetable garden, improve soil around trees and shrubs, improve the water-holding ability of your window boxes and flower planters.
- ☐ **What can be composted?** Plant debris, vegetable scraps, weed seedlings, leaves, grass clippings. 
- ☐ **What should be avoided?**
 - Fish, meat, dairy products, bones, fatty foods, grease, dog feces and kitty litter.
 - Diseased or infested plants, toxic plants and weeds which have gone to seed.
- ☐ **Where can I get more information?** Your Cornell Cooperative Extension office has much information for you regarding composting and will be offering workshops on this topic. Please call them and request a free fact sheet.

Don't Treat Your Soil Like Dirt Improve It!

- ☐ **Maintain Proper Soil pH**
- ☐ **Use Chemical Fertilizers Sparingly**
- ☐ **Preserve Soil Air Spaces**
- ☐ **Enhance Soil Organisms**
- ☐ **Add Organic Matter**



Cornell Cooperative Extension of Clinton and Essex Counties

For more information on organic matter
and other topics, call your
Cornell Cooperative Extension office!

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Role of Organic Matter

Most New York State soils are composed of about 45% minerals, 25% water, 25% air and from 1-5% organic matter. While each component is important to soil structure and plant growth, no other component is more important than soil organic matter.

When the proper amount of organic matter is in the soil, it works with the other components enhancing them to make more effective plant growth.



While soil organic matter is complex and is in itself an ecosystem, it can be loosely defined as ***the remains of once living tissues of plants and animals***. Since it is derived mainly from plant residue, it contains all of the essential plant nutrients and, upon decomposition, releases these nutrients back to the plants.

But the above paragraph tends to oversimplify the function and importance of soil organic matter. In addition to supplying plant nutrients, organic matter also ...

- ☐ reduces leaching of plant nutrients and serves as a "bank" for the nutrients, making them available to plants over a long period of time.
- ☐ improves soil structure or "tilth", making the soil a more favorable place for root development.
- ☐ holds large amounts of water and makes it available to plants as needed.
- ☐ provides for more rapid water drainage through clay soils in periods of heavy rains.
- ☐ improves aeration in the soil, providing a better environment for plant roots and soil microbes.
- ☐ provides food and biological growth media for a diverse population of microbes.
- ☐ when used as a mulch, blocks weeds and protects the soil from erosion by wind and rain.

Increasing Organic Matter in Your Soil — A Good Practice

Use Organic mulches

Organic mulches are easy to find and can greatly improve the soil. Following are examples of organic mulches, along with some precautions for each:

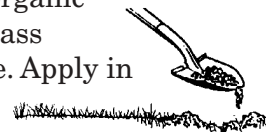
- **wood chips/shredded bark** — the larger the particle size, the more slowly it decomposes.
- **sawdust** — should be applied no more than 1-2" thick unless it is very decomposed. Year-old sawdust is preferable to fresh.
- **hay and straw** — help conserve soil moisture and block weeds, but may contain weed seeds. Hay provides some nitrogen while straw uses up some nitrogen as it decomposes.
- **grass clippings** — apply in layers no more than 2" thick. Works well in vegetable and flower gardens. Avoid clippings treated with lawn herbicides.

Add Soil Amendments

Amendments are materials that are tilled into your soil rather than being left on top as a mulch.



- **peat moss** — is widely available and used. It is difficult to wet but once wetted it holds water well. In flower and vegetable gardens you can add a layer up to 4" deep before tilling.
- **animal manure** — is an excellent source of nutrients and organic matter as well as a rich microbial infusion for your soil. Aged or composted manure can be applied at any time but is best tilled into the soil. Apply in layers 1-2" deep, then till in.
- **compost** — is made from decayed organic materials such as manures, leaves, grass clippings, and certain kitchen garbage. Apply in layers 2-3" deep, then till in.



Grow Cover Crops and Green Manures

A **cover crop** is a temporary planting, usually done in the fall, that protects the soil from wind and water erosion as well as adding organic matter to the soil. Winter rye is commonly used in our area as a cover crop.

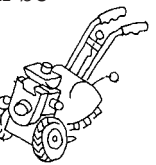
Winter rye can be planted after the summer garden crops have been harvested and as late as very early October. Lightly till your soil to provide a seedbed, incorporating lime ***only if a pH test shows it is necessary***. Broadcast the cover crop seed and rake lightly to cover it. Water in the crop if possible.

It will become established in the fall, go dormant through the winter and resume growth as the weather warms. Most growth occurs in the spring and if allowed to grow too high, is sometimes difficult to incorporate back into the soil.



Green manure crops are planted for soil improvement and are left in place for a few months to a year. Two common green manure crops used in our area are oats and buckwheat.

Oats can be planted as early as the ground can be worked, while buckwheat likes soil a little warmer. For an intensive crop rotation, an early crop of oats can be followed by a crop of buckwheat and then followed by a second late crop of oats or a cover crop of winter rye.



Planting is the same as for cover crops but these crops should be tilled in before going to seed. Such crops are sometimes difficult to till into the soil because they grow three to four feet tall and tend to clog most roto-tiller tines. In such situations, it helps to mow the crop down before tilling.