

Backyard Conservation

Soil - It's Not Just Dirt!

THINK ABOUT IT

Soil is more than just dirt. Pick up a handful of soil and imagine it is the earth's surface. Right away, remove three-fourth of the handful and drop it back on the ground--that's how much of the earth is covered by oceans, rivers, and lakes. What's left represents the land. Now, drop one-half of the soil in your hand to account for desert regions, glacial poles and mountain peaks where many things won't grow. Then drop one-tenth to account for the places where people live--where the land is used for big cities, towns, houses, schools, roads, and parking lots.



**The Good Earth. It's the Stuff of Life,
It's in Your Hands!**

Now, look. What's left in your hand represents all the soil we have to support life on earth. This soil is trickling through our fingers at an alarming rate due to unchecked erosion. In fact, recent statistics indicate the U.S. is losing 6.4 billion tons of soil each year due to erosion. This amount of soil would fill 320 million dump trucks which if parked end-to-end would extend to the moon and three-quarters of the way back. The eroding soil is washed into lakes and rivers and blown into our air where it pollutes our environment. If we all knew a little more about soil, we could each do our part to help conserve this precious resource.

Read on for some fascinating facts and conservation tips about soil.

- Soil makes up the outermost layer of our planet.
- Topsoil is the most productive soil layer. It has varying amounts of organic matter (living and dead organisms), minerals, and nutrients.
- Five tons of topsoil spread over an acre is as thick as a dime.
- Natural processes can take 500 years to form one inch of top soil.
- Soil scientists have identified over 70,000 kinds of soil in the U.S.
- Soil is formed from rocks and decaying plants and animals.

- An average soil sample is 45% minerals, 25% water, 25% air, and 5% organic matter.
- Different sized mineral particles, such as sand, silt, and clay, give soil texture. Lichens help to break a rocks to form soil.
- Fungi and bacteria help break down organic matter in the soil.
- Plant roots break up rocks, which become part of new soil.
- Roots loosen the soil and allow oxygen to penetrate. This is beneficial to the animals living in the soil.
- Roots hold soil together and help prevent erosion.
- Five to ten tons of animal life can live in an acre of soil. Earthworms digest organic matter, recycle nutrients, and make the surface soil richer.
- One earthworm can digest 36 tons of soil in one year.
- Mice take seeds and other plant materials into their underground burrows, where this material eventually decays and becomes part of the soil.

Tips on Protecting YOUR Soil

It is not hard to conserve soil in your own backyard. The first step is recognizing areas that are prone to erosion. You should look for:

- areas where no plants are growing along property lines, walkways, and drives.
- sloped areas where gullies are forming from water runoff.
- exposed soil around houses and downspouts.

Other signs of soil erosion are dust in the air on windy days, and mud in gutters and on sidewalks. These factors indicate that soil is eroding from surrounding areas.

Once you have identified the problem areas, consider these ways in which you can help curb erosion:

- Seed exposed areas with grass, or plant some other groundcover. After seeding, spread a mulch (such as straw or compost) over the area to help keep the seeds moist and in place until they germinate. On steep slopes you should cover the mulch with burlap netting for extra protection.
- Build steps, made of logs or old railroad ties, on areas with steep slopes to help prevent increased erosion. Between the steps, spread a thin layer of wood chips to protect the soil.
- Put splash guards on downspouts to help reduce erosion around the foundation of your home.
- Plant windbreaks of trees or shrubs to reduce soil loss from blowing wind and also to provide habitat shelter for wildlife.
- Contact your local resource agencies, such as the Soil and Water Conservation District for assistance and advice in devising an appropriate erosion control plan for your backyard.

Here are some soil-wise ideas that will help keep your garden healthy and productive:

- If your garden is on a slope, plant the vegetable rows along the contour, rather than up and down the slope. This will help slow down water runoff and decrease the rate of soil erosion.
- Plant different crops in different places in your garden each year. For example, a plot used for growing tomatoes one year is used for planting beans the following year. Rotating crops balances the uptake of valuable nutrients from the soil and keeps your plants strong and healthy.
- Spread mulch around your garden plants using compost or grass clippings to help reduce erosion, keep moisture in the soil, suppress weed growth, and add nutrients.

- A good way to create a mulch and enrich your soil is by making a compost pile. Construct a small bin beside your garden plot to hold the composting material. Fill it with alternating layers of organic material (i.e. grass clippings, dead leaves, and plant stalks and hulls) and garden soil. Keep moist and turn the compost pile regularly to aerate it. This helps speed up the natural decaying process. A good compost can create a rich fertile mulch for your garden.
- Minimize the spraying of poisonous insecticide in your garden, by letting certain types of plants and insect-eating animals control pests. Some plants, such as marigolds and onions, contain chemicals that repel pesty bugs. Toads, ladybugs, praying mantises, and other insect-eating animals can also help control pest populations in your garden.

Conserving Soil & Water with Mulches

The use of mulches has long been recognized as an agricultural and gardening practice that protects natural resources while adding organic matter to the soil. Mulch is a finishing layer spread on the surface after all other garden cleanup and planting is completed.

Mulches range from homegrown materials, such as leaves and grass clippings, to industrial by-products, such as sawdust and cranberry pits. The resourceful gardener can find an endless supply of mulch materials to use to save water, conserve soil, suppress weeds, and contribute valuable nutrients to the garden.

Mulches provide these benefits:

- Help hold soil particles and nutrients on the field or garden and slow down water runoff, thereby improving surface water quality.
- Decrease exposure to sun and wind, thereby reducing water evaporation from the top few inches of the soil reducing the need for frequent irrigation or watering.
- Suppress weed growth, reducing the need for chemical herbicides.
- Maintain soil quality and protect crops, gardens, and lawns by reducing soil erosion by water and wind.
- Some of the mulches recommended for home gardening include municipal mulch products, leaf mulch and grass clippings, newspaper bedding, coffee grounds, straw, industrial by-products available through manufacturers, and groundcovers such as pachysandra and periwinkle.

Using Mulch from your home Environment

You can make compost yourself from leftover plant materials from your garden or from kitchen scraps, such as fruit and vegetable waste. Newspapers can be used in home composting. They are considered safe for composting: research has indicated that PAH's (polycyclic aromatic hydrocarbons) which were formerly used in black inks, are rendered inert by the temperatures generated in a hot compost pile, the biological activity, and the acids in soil.

Mulch materials add organic matter to the soil and furnish food for earthworms, which are valuable in aerating the soil. At the end of the growing season, the mulch can be worked into the soil to supply organic matter the following year.

To provide a source for mulch you should have a compost bin -- or preferably two. Commercially produced, and in some cases municipally supplied bins are available. You can make the bins yourself by attaching ordinary wire fence or boards to solid posts or open brickwork. Each bin should be about 4 feet high, 3-5 feet wide, and any convenient length. One side of each bin should be removable for convenience in building up the compost materials and for taking it out.

The ideal way to make compost is to use two bins. Fill one with alternate layers of organic materials 6-12 inches thick and of garden soil about 1 inch thick. Chemical fertilizer may need to be added.

Be sure to moisten the organic materials thoroughly. Repeat this layering process until the bin is full or you run out of organic material. Pack the material tightly around the edges, but only lightly in the center so that this area settles more than the edges and the water do not run off.

After 3-4 months of moderate to warm weather, begin turning the material by moving it from the first bin into the second bin. Before turning, it is a good idea to move the material that was added the previous fall from the edges, which dry out first, to the center.

Leaf Mulches and Grass Clippings

Leaves are rich in carbohydrates and make excellent mulch when combined with organic materials rich in nitrogen. To improve soil health it is beneficial to compost leaves before using them as mulch. However the advantage of applying raw leaves is that they are more efficient in suppressing weeds.

Grass clippings are easy to apply as mulch. Simply spread a 3-6 inch layer on the soil surface around your plants, making certain you do not cover the plants. Keeping the layer deep enough to do the job is important too. This means that you will need to add more mulching material over the old layers to get all the benefits of mulching. You may need to mix the grass clipping with other mulch materials to keep them from packing down.

Municipal Mulch and Compost.

Most suburban and urban municipalities will collect leaves in the fall as well as remove and prune street trees. Many municipalities also have an area designated for residents to bring leaves, brush and branches. Due to the high cost of disposing of the vegetative materials, many municipalities have processed the materials into wood chip mulch and compost which is then made available to the residents for their landscape and gardens. This not only saves the municipality and the residents money, but also recycles the vegetative materials. Another possible source of compost and mulch is your county, as there are some that operate vegetative recycling facilities.

Municipal Mulch

The mulch available from municipalities is generally composed of wood and brush that has been chipped. The wood and brush usually comes from resident's yards and from pruning or removal of trees from streets and parks. The types of woody materials usually

vary with the sources available. Generally there is a reasonable mix of hardwood and softwood, which makes it ideal for use on landscape beds, around trees and shrubs, or in areas where grass is difficult to grow. Since there is usually a good source of material, the mulch areas can easily be re-mulched as required.

Municipal Compost.

The compost available from municipalities is generally from the composting of leaves collected in the fall. However, it may include grass clippings and chopped brush. This is an excellent material to incorporate into your garden to improve the fertility and organic matter content. The quality and quantity of municipal compost has been improving in recent years as municipalities refine their composting facilities and invest in better equipment.

The best way to find out if your municipality offers residents municipal mulch and/or compost is to contact the Recycling Coordinator or Public Works Department. Generally the only requirement is that you are a resident and are willing to haul the materials yourself. Supplies may be limited and available only in late winter and early spring, so it is a good idea to ask which are the best days to pick up the material.

If you do not mind hauling the materials, one of the best sources of mulch and compost materials is in your own community and free for the taking!

Pine Straw as Mulch

Pine straw or pine needles may also be used as mulch and to add to the appearance of a natural landscape. Pine straw is especially useful with acidic-loving plants such as evergreens, holly, azaleas, and rhododendrons. Because of its acidic nature, pine straw resists decomposition so can be used more than once.

Pine straw is light and easy to spread. When spread to a recommended thickness of 3-4 inches it will reduce weed competition. But pine straw absorbs little moisture, so it is inferior to straw for reducing the need to water.

Straw as Mulch

Straw is the stalk of a small grain such as wheat, cereal rye or barley after the grain has been harvested. When used as mulch it performs well for a number of reasons:

- Is readily available at a reasonable cost to the home gardener.
- Is relatively free of weed seeds (as opposed to hay, which does contain many weed seeds)
- Is organic and therefore biodegradable
- Captures moisture and keeps it available to plants for a longer period of time.
- Will reduce weed competition.
- A good thick layer of straw (6-8 inches) may help prevent some insect damage from soil born pests such as cucumber beetles. However, straw does have a few minor irritations. It is bulky and comes in bales that need to be broken open and then spread. Spreading straw can be difficult on windy days, and if allowed to dry can be a fire hazard.

Backyard Conservation on the Web

Additional information on Backyard Conservation is available on the Web

<http://www.nrcs.usda.gov>