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C075

GUIDE TO MULCHES

Mulch is any material that is applied to the surface of the soil. It differs from a **soil amendment** which is material that is dug into and mixed with the soil.

During the growing season, mulch discourages weeds, conserves soil moisture, and helps stabilize soil temperatures. Mulch can decrease soil erosion by protecting the soil surface from the force of falling water droplets. Bare soil tends to form a crust which impedes water penetration, and mulching can prevent this from happening. Mulched soil is cultivated less frequently than bare soil, therefore soil structure is left intact. Organic mulches decompose and add nutrients to the soil. Fruits and vegetables that lie on top of soil will remain clean if the soil is mulched.

Mulches used during the growing season should be applied in mid-spring after the soil has warmed. If mulches are applied earlier, the soil temperature will stay low and plant growth will be delayed. Mulches should be applied 2 to 4 inches deep over relatively clean, **weed-free** soils. Covering existing perennial weeds, especially weedy grasses, will not control them. Water deeply before you apply mulch. This is very important---**never apply mulches to dry soil**. Continue to check soil moisture and water as needed. Keep organic mulches several inches away from the trunks of trees and shrubs and the stems of herbaceous plants to prevent excess moisture at these sites; otherwise, rots and other disease conditions may result.

During the winter, mulches such as pine needles, straw, hay, or evergreen boughs offer protection for perennials, roses, and other tender shrubs from temperature extremes. They should be applied in late fall after the soil has frozen but before the coldest temperatures of winter arrive.

When selecting mulch, think about availability, affordability, appearance, and ease of maintenance. The following list will help you select appropriate mulches for your purposes.

Compost	Use 1 to 3 inches in vegetable gardens, flower, and shrub beds. Can be incorporated into vegetable and annual flower beds at the end of the season as a soil amendment to improve the soil. Can be a source of weeds and/or plant disease if compost pile hasn't had a sufficient heating period.
Bagged Steer Manure	1 to 2 inches of bagged steer manure can be used in much the same way as compost. It has been sterilized and should be free of problems. There are few nutrients in bagged steer manure, and it should not be relied on as a fertilizer. Expensive if large amounts are needed. Can be incorporated into vegetable and annual flower beds at the end of the growing season as a soil amendment.
Coarse Bark	Use 2 to 3 inches around trees and shrubs. Keep the bark back a few inches away from the base of the trunk to prevent rot or rodent damage. Decomposes slowly. May attract carpenter ants. Bark contains suberin, a waxy substance that repels water, consequently bark mulch may impede water penetration into the soil. Periodically check soil moisture content under the mulch.
Fine Bark (also called Mulching Bark)	2 to 3 inches of fine bark is easy to use in flower and shrub beds and will eventually break down and improve the soil. Must be regularly replaced.
Sawdust	Use 2 to 3 inches of sawdust in vegetable and small fruit gardens, flower beds and in paths. Use well-rotted sawdust and be prepared to add fertilizer with a high nitrogen content if plants become pale or yellow in color. Sawdust is inexpensive and readily available. May become compacted and impede water and oxygen movement into the soil. Do not use sawdust from plywood.
Wood chips	Use 2 to 4 inches around trees and shrubs. Keep the wood chips back a few inches from the base of the trunk to prevent rot or rodent damage. Allows good penetration of water into the soil. Weathers to a gray color over time. Readily available.
Coffee Grounds	Easily compacted and can create a barrier to water and oxygen movement into the soil, therefore use only a half-inch layer and cover that with a thicker layer of coarse organic mulch such as wood chips or fine bark. Will readily decompose and add nitrogen and other nutrients to the soil. Better used as a soil amendment or as an addition to a compost pile rather than as a mulch.
Coconut husk fiber (coir) –	Available loose or as mats. Mats are particularly effective for erosion control. Does not pack down and allows good penetration of water and oxygen.
Shredded Leaves	Use 2 to 3 inches in flower, vegetable, or shrub beds. Most leaves can be shredded with a lawn mower if a shredder isn't available. If not shredded fine enough, may mat together and form a barrier that blocks water and oxygen movement into the soil. Black walnut leaves are toxic to many plants and should not be used in the garden or compost pile. Do not use leaves that have diseases or insect problems. Readily available. Leaf mold (partially decomposed leaves) is a particularly effective mulch.

Pine Needles	3 to 4 inches or more of pine needles can be used in shrub and flowerbeds. Shredded pine needles are easier to handle than the whole needles in flower beds and work well in paths. Whole pine needles are light and airy and can be used as winter mulches in rose and perennial beds. Needles take decades to decompose and because of this, they do not acidify the soil as was once thought. Readily available.
Grass Clippings	Use 2 to 3 inches around vegetables, berries, and flowers. To prevent smelly, wet mats, spread the clippings out to dry for a day or two before application. Don't use grass clippings from lawns that have been treated with a weed killer. Readily available.
Straw; Hay	Use up to 6-8 inches in vegetable gardens, around strawberries and other small fruits. Straw can be a fire hazard, and both straw and hay can be a source of weed seeds in the garden. Chopping it up will make straw or hay more attractive and less likely to blow around in the wind. May lower soil nitrogen as it decomposes, therefore be prepared to add high-nitrogen fertilizer if plants become pale or yellow in color. Inexpensive and readily available.
Pea Gravel	Use 1 to 2 inches around plants such as many of the rock garden perennials that are susceptible to crown and root rot. Can also be used to make garden paths.
Crushed Rock (White or Lava Rock)	Fairly expensive but does not need to be replaced very often. Won't blow away. Resists compaction. Often used over black plastic or weed fabric barriers. Most effective where a decorative look is preferred.
Layers of Newspaper; Cardboard sheets	Sheets of cardboard or 6 to 7 layers of newspaper can be used to mulch vegetable beds or paths. Do not use glossy paper or color prints. Once dry, newspaper and cardboard are hard to moisten and will impede water penetration into the soil. If dry, they may blow about in the wind. Unattractive unless covered by another mulch such as bark.
Black Plastic	Controls weeds but blocks water and oxygen penetration to roots. Must be covered with another mulch such as bark. Inexpensive; does not need to be replaced very often.
Fabric Weed Barriers	Fabric weed barriers can be used in new vegetable gardens, small fruit gardens, new perennial gardens, and shrub beds. Though much more expensive than black plastic, they allow water, fertilizer, and air to the plant roots. Easily degraded by ultraviolet rays in sunlight, they must be covered with a layer of another mulch such as bark or rock. If weeds germinate in the overlying mulch, their roots can penetrate the fabric and make weed removal difficult. Roots of landscape plants can colonize the fabric and be damaged if the fabric is subsequently removed.
Rubber	Mats made of ground rubber are available commercially. Rubber is highly flammable and difficult to extinguish once it is burning. Eventually decomposes and leaches metal and organic contaminants. Does not perform as well as other organic mulches at weed suppression.

Sources:

Chalker-Scott, Linda. *The Myth of Rubberized Landscapes*. Washington State University.

Chalker-Scott, Linda. *The Myth of Pretty Mulch*. Washington State University.

Chalker-Scott, Linda. *The Myth of Landscape Fabric*. Washington State University.

Chalker-Scott, Linda. *The Myth of Paper-Based Sheet Mulch*. Washington State University.

Chalker-Scott, Linda. *Coffee Grounds—Will They Perk Up Plants?* Master Gardener, Winter 2009.

Mulch! Cornell University. http://blogs.cornell.edu/horticulture/mulch/

Mulching for Moisture, Weed Control and Soil Protection. USDA Natural Resources Conservation Service Practice (484).

Mulching. USDA Natural Resources Conservation Service Backyard Conservation Tip Sheet.

Mulches and Mulching for Erosion Control. USDA NRCS Technical Notes, 2005.

Mulches for Nevada Landscapes, Pub. 06-10. University of Nevada Cooperative Extension.