OLD NORTH END
NEIGHBORHOOD

Mulch Information Sheet

The quality of food we eat, water we drink and air we breathe -- in fact the well-being of all plant and animal life -- is determined by the quality of our topsoil. The earth's crucial thin layer of soil must be protected, maintained, built and nourished. A mulch cover of various materials on soil enables, conserves and enhances our precious soil.

Natural mulch consists of dead leaves, twigs, fallen branches and other plant debris which accumulate on the earth's surface. Bacteria, fungi and other living organisms use these raw organic materials for food, a process we know as decay. In the natural scheme of things, decay is Nature's way of returning to the earth the raw materials borrowed by previous generations of plants.

Organic mulches not only conserve moisture, they also feed plants, earth worms, microbes and other beneficial soil life by composting at the moist earth surface. More species and volume of life occurs below than above the soil surface. All soil life needs energy. Soil flora and fauna cannot collect energy directly as green plants do, but the feed on energy released from decaying mulch which is their preferred food source.

As microbes digest organic materials they give off a sticky substance that glues soil particles into a crumb-like structure. Carbon dioxide-oxygen exchange necessary for healthy root growth and proliferation of beneficial soil life is enhanced. Better control of soil pathogens results.

Crumb-like or crumbly soil structure also allows water to soak in better. Water that soaks in is held on the humus and clay particles for future plant use. Water amounts higher than the field capacity of a soil is filtered by organic matter as it flows downward to feed aquifers that supply drinking water. Soils which have lost crumb structure need mulch cover to re-build. The City of Denver requires four cubic yards of compost incorporated into each 1,000 s feet of surface area in new construction or renovation because they know that good soil retains moisture.

People can adapt natural mulching to cropping practices and to production and landscape-use of ornamental plants by using available living or dead organic matter and inorganic materials. **Native materials collected in your area are the best mulch. It is neither economical nor environmentally feasible to ship in barks, woodchips or some other fancy material from a distant source when usually there are nearby materials being wasted.**

Reasons for Mulching

Mulching encourages better plant growth and development, and makes all landscape maintenance operations easier. These benefits accrue whether plants are growing in the coolest or hottest climates or in the wettest or driest weather.

A mulch is any material placed on the soil surface to conserve moisture, lower soil temperatures around plant roots, prevent erosion and reduce weed growth. Mulches can be derived from either organic or inorganic materials. Mulches also provide a unified look to the landscape.

What Do Mulches Do?

Mulch insulates and protects soil from drying and hard-baking effects caused by evaporation of water from soil exposed to hot sun and winds. Mulched soils are cooler than non-mulched soils and have less fluctuation in soil temperature. Optimum soil temperatures and less moisture evaporation from the soil surface enable plants to grow evenly. Plant roots find a more favorable environment near the soil surface where air content and nutrient levels are conducive to good plant growth.

Mulches break the force of rain and irrigation water thereby preventing erosion, soil compaction and crusting. Mulched soils absorb water faster. Mulches prevent splashing of mud and certain plant disease organisms onto plants and flowers during rain or overhead irrigation. The mulch covering excludes light which prevents germination of many weed seeds. Fewer weeds provide less competition for available moisture and nutrients. Using mulches to control weeds is safer than applying herbicides or cultivating which can damage tender, newly formed roots. Mulches also add attractive features to landscape.

Research and common sense have shown that a high organic content favors soil microbes, helps detoxify chemicals and also furnishes energy needed by the microbes. This is another great benefit of using organic mulches. Decaying organic mulch on soil keeps both plants and beneficial soil life species flourishing so they can help each other.

Management of Mulches

Apply mulches in a layer 2 to 6 inches thick. Layer thickness depends on mulch material, e.g., coarser mulches are applied more thickly. Thicker layers of mulch are placed around trees and shrubs than in flower or vegetable beds. Four inches of loose fibrous materials works well around trees and shrubs. The finer and smaller the particle size, the thinner the layer needs to be. Thick layers of very fine material block air to the roots of plants. In their search for air, roots will grow up into mulch, which can be harmful to plants if the layer of mulch is not constantly maintained. Organic mulching materials should be added regularly to maintain the desired layer thickness. Shredded branches from tree trimmings and large two-inch bark is a fibrous or loose mulch. Leaves or leaves mixed with some grass clippings and one-inch size bark would be a

medium mulch. When using medium mulch, the layer should be about two inches thick. One-half inch and smaller materials, such as fine-screened and double-ground barks, should only be one inch thick layers. When piled too thickly, these tiny particles can quickly settle together and prevent air and water from penetrating into the soil. The finer, smaller materials should be used around small flowers and vegetables.

When applying mulch around plants, cover the entire area of soil containing roots. **Do not pile mulch against tree trunks**. It isn't needed against trunks and may do harm. Build a circle around plants making the plant the center of the circle. This also forms a catchment basin for water.

Mulches can increase availability of certain elements in the soil.

Mulching Your Lawn (Though, *"if the only you time you walk on it is to mow it,"* consider taking out your lawn in favor of a patio, shrubs, native plants, native grasses, etc.)

Mow frequently and allow grass clippings to remain on lawn areas. Mulching lawn mowers are best for mulching your lawn naturally. Most lawns will benefit from additional mulching. Don't use the same mulch you put around flowers, shrubs and trees. It is best to supply one-half inch of fine screened compost in the fall or early winter after the grass has stopped growing. During periods of water restrictions, cover bare areas or dead turf with compost to precondition the area for replanting when water is once again available. Remember, all grasses and grass seed must be watered AT LEAST twice a day for 7 to 10 days after sodding or sowing to insure stand survival and water restrictions prohibit such water use. The use of a compost dressing over bare spots during drought conditions will insure a rapid establishment of lawn grasses when planting can occur and will make unsightly areas more attractive.

Lawns are our biggest water consumers. For this reason lawns are the most important places to practice water conservation by mulching. Lawns with no crumb structure, no humus, no beneficial soil life or root colonizing microbes require more care. See Harvard University's lawn care methods which are 100% organic at
http://www.nytimes.com/2009/09/24/garden/24garden.html?pagewanted=all&_r=0

Watering with Mulch
While mulches do retain moisture in the soil, it will still be necessary to water plants growing in mulched soils. Water should be targeted beneath the mulch specifically at the root zone of desirable plants. Drip irrigation is the most efficient, effective watering technique.

When to Water
Soil moisture level is the best criterion for watering. If soil moisture is adequate, don't water, even if a plant is wilted. To test for soil moisture, probe around plants with your finger. If the soil

is moist several inches deep, i.e., will form a ball when squeezed, there is adequate moisture present.

How to Water

Knowing "how" may be the most important part. First of all, plant soils need to be thoroughly wet not saturated. Deep watering is desirable to insure development of deep, drought-tolerant root systems.

It is best to water plants thoroughly and deeply with drip irrigation. "Drip or trickle" irrigation allows precise application of water in the immediate vicinity of plant roots. Soil moisture in the root area around the plants is maintained at a uniformly optimum level throughout the growing season. Small amounts of water are applied frequently to replace that withdrawn by transpiration of water from leaves. Most water loss by evaporation from the soil IS PREVENTED BY MULCH. Growth and production of plants is greater with uniform watering (kept moist - not too wet or dry) rather than being subjected to wet and dry cycles which normally occur with other irrigation methods.

Operation of a drip system should insure adequate soil moisture. Distribution and evaporation losses are minimized. Less of the total soil surface area is fully wetted than with sprinkler systems. Normally, only 25 percent of the soil surface is wetted with drip. This significantly reduces the amount of water required for irrigation. This does not reduce the plant's water requirement. Drip irrigation also simplifies irrigation procedures and reduces labor requirements.

Drip systems are available at most local nurseries. Drip systems can be used to water during periods when drought restrictions forbid most other types of watering. However, drip systems are not fool proof and must be properly maintained for best results.

Proper Use of Mulches

In garden beds planted every year, organic mulches can be incorporated into the soil each year to improve soil structure. New mulch is applied each year. Regardless of the source of organic matter, two factors are important to the user. One is the stage of mulch decomposition and the second is relative salinity of the material. Manures and sludges are usually saline and may sometimes cause trouble unless used in moderation. Many packaged manures come from feedlots—in addition to high salinity, some contain antibiotics and hormones according to researchers at CSU. Look for organic.

Organic Mulches

Municipal Tree Trimmings - Using local mulch (from municipal tree trimmings) around plants has certain advantages over pine or hardwood bark. The contents of the local mulch is much closer to the contents of rich compost. The local mulch blend actually feeds plants being mulched but bark can cause nutrients to be robbed from plants being mulched.

Bark (Pine) - Ground bark is available mostly from pine trees in sizes ranging from 2-inch chunks to a fine grind. It provides an attractive long-lasting cover and is usually reddish brown in color.

Grass clippings – ONLY from yards without chemicals. These must be spread thin (two inches or less) and allowed to dry. If applied too thickly they will build up heat and foul odors and become slimy during decomposition.

Compost - This dark colored material is easily spread and has slight nutrient value. It may be highly satisfactory where available from commercial producers or homeowners. To know what is in it, build your own compost pile.

Peat Moss – Best avoided. Peat is one of the best carbon sinks in the world and is renewable only if we think in terms of thousands of years. Fine texture and good color are characteristic of peat moss, but it has a tendency to dry out and become impervious to water. It is costly to use in large quantities. Domestic peat moss may be so finely ground that it will blow away and is difficult to wet if it becomes dry. Water may run off rather than be absorbed by it.

Pine Needles - Needles are green when fresh then turn reddish brown to gray upon drying, are long-lasting and supply nutrients as they decompose. Pine needles make attractive mulch which is good for acid-loving plants.

Shavings - Shavings last longer than sawdust and will not mat as badly, decompose rapidly but blow away easily during strong winds. Wood chips mixed with shavings pull much nitrogen from soil. Nitrogen level must be increased.

Straw - Straw is coarser, more durable than most kinds of hay, and in most instances, is not attractive in ornamental plantings unless chopped. Straw requires applications of nitrogen because of its non-decomposed nature.

Wood Chips - In landscape operations wood chips offer a useful method for disposing of waste twigs and branches. It is good mulch, coarser than sawdust and less likely to cause nitrogen deficiency. Wood chips are long-lasting, lie flat, and do not blow away easily in strong winds.

Gorilla Mulch. Must be loosened at least annually or compacts and prevents water from reaching the oil.

Given that our mature landscaping and natural building materials are distinctive characteristics of the ONEN neighborhood, try to avoid colored mulch in preference of natural materials and colors.

Where to get Organic Mulch

Free mulch is available from City Forestry or the Black Forest Slash-Mulch Program . For more information on mulch visit our website (Insert link here). Mulch can also be purchased (picked up or delivered) from many local businesses such as Rocky Top, C&C and Pioneer.

Inorganic Mulches

Inorganic materials used for mulches do not add nutrients or humus to soil and do not decompose except after long exposure to weathering. Many can substantially increase ambient heat.

Crushed Rock - Crushed rock or stones are available in many colors or sizes and make a permanent cover. These materials are especially useful around plants subject to crown rot. Spread deeply, crushed rock can be walked on immediately after watering. Remember that white rock radiates sunlight and can create too much heat for most plants to survive. Black rock absorbs heat and can cause soil temperatures to be hotter than normal. A caution: Inorganic mulches of this type are exceedingly difficult to maintain and keep clean.

Pea Gravel - Pea gravel is an attractive permanent mulch. It is usually applied 2 to 4 inches deep and can be reused indefinitely. Pea gravel in various sizes is especially good for soil surface around plants in containers and in rock gardens.

Additional Resources

For more information on mulches, maintaining your landscape in a drought, best plants for our area, visit the Mesa Xeriscape Garden at 2855 Mesa Road or online at https://www.csu.org/Pages/xeriscapebasics.aspx

There are also many resources available at the El Paso County CSU Extension Office at 305 S Union Blvd or online at http://elpasoco.colostate.edu/hort/hort.shtml

Lawn Care Tips from CSU Extension: http://www.ext.colostate.edu/pubs/Garden/07202.html