

G1257
(Revised April 2005)

Mulches for the Home Landscape

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This NebGuide explains the advantages and disadvantages of using organic and inorganic mulches in home landscapes.

Mulch is an organic or inorganic material applied to the surface of the soil. An important characteristic of mulch is its ability to insulate a plant and its roots from the effects of extreme temperature fluctuations. Ideal mulches must allow water and air to enter and exit the soil. They should be attractive, relatively odor free, and stay in place.

Both inorganic and organic mulches benefit the landscape. They:

- reduce the amount of water lost from evaporation;
- protect trees and other landscape plants from mechanical injury due to mowers and string trimmers;
- protect exposed roots from lawn mowers;
- reduce soil compaction caused by people and equipment by diverting traffic around landscape beds;
- reduce soil and wind erosion, especially on steep slopes;
- reduce incidence of disease by protecting above-ground plant parts from splashes that carry soil-borne inoculum;
- reduce fruit rot by eliminating contact between fruit and soil;
- reduce winter injury by minimizing temperature variation;
- help control weeds; and
- maintain cooler soil temperatures during the summer.

Organic mulches are derived from plants or animals. They break down over time, add organic matter to the soil, and improve soil structure. In sandy soils they may increase water-holding capacity. In clay soils they can improve water drainage. Woodchips, bark, grass clippings, leaves, pine needles, straw, and sawdust are examples of organic



Woodchips are a desirable mulch for home landscapes. (Photo courtesy of Kim Todd.)

mulches. Organic mulches may be incorporated into the soil when beds are renovated or removed, but nitrogen may need to be added to the soil to prevent nitrogen deficiency in surrounding plants. Some consumers do not like organic mulches because of their tendency to move out of landscape beds during heavy rainfalls or gusty winds. Watering organic mulches after installation will increase their ability to hold together and minimize movement.

Inorganic mulches are materials that come from nonliving sources. They rarely break down, or they break down slowly. Rock (river, pink, white, and lava) is the primary inorganic mulch used by homeowners. Although not considered mulches, landscape fabrics and plastics are used in conjunction with inorganic mulches and are also inorganic materials. Since inorganic mulches do not break down quickly, they only need to be replenished when they are worked into the soil or are moved off site. Inorganic mulches are difficult to remove when beds are planted, renovated or eliminated. Many consumers prefer inorganic mulches because of their longevity; however, inorganic mulches will increase reflective heat and soil temperatures. As a result, landscapes may be uncomfortable to be in or view on sunny days, and increased temperatures may damage plants. When covered with inorganic mulch, soil in landscape beds warms up earlier in the year, causing plants to break dormancy and become vulnerable to low-temperature injury.

Applying Mulches

The depth of the mulch depends on the type of soil, plants, and mulch used. Layers thinner than the recommended depths may need to be replenished more often and may not give the desired benefits. Thicker layers may reduce the amount of oxygen in the soil and encourage plants to root in the mulch layer rather than in the soil. Thick layers may also shed water and prevent it from moving into the soil.

During wet periods, avoid thick layers of mulch around plants in heavy soils such as clays and clay loams. Thick layers may reduce soil oxygen and injure plants. When conditions are cool and wet, mulch should be pulled away from plants to ensure good air and water exchange.

Never apply mulches against the bark of woody trees or shrubs. This may encourage insect and disease problems to occur on thin-barked (maple, for example) and wounded trees. It also may provide protected chewing access for small rodents and other animals, which can severely injure the bark and cambium.

Organic mulches are usually replenished in the spring. A quick raking of the existing mulch will help determine how much mulch should be added. Raking will also break up water-shedding layers. Generally only light topdressing is needed each year. Dropping mulch through a manure fork is an easy way to apply a light layer. Although some plants such as cool-season vegetables will benefit from early mulch and will produce later into the season if soils are kept cooler, most plants benefit from waiting to apply new mulch until soil temperatures have warmed up. Prior to mulching, beds should be well watered if needed.

Late season organic mulches are applied after at least two hard freezes. Applying mulch earlier will insulate the soil and keep plants from hardening off. Late season mulching is especially important for recently installed plants to prevent frost heaving – the freezing and thawing action of the soil that may push plants out of the ground. Evergreens, especially broadleaf evergreens, need to be well watered and mulched before winter because the leaves will continue to lose moisture throughout the winter. Some marginal plants require mulch over the entire plant to protect them from temperature fluctuations that occur in Nebraska. Entire plant mulches need to be removed in the spring when temperatures warm up in order to allow new growth. The mulch should not be removed too early because damage can occur if an unexpected freeze happens. Mulch that is not removed once temperatures increase will keep the soil cool and delay growth.

Mulches

For good plant health, organic mulches are generally preferred over inorganic mulches. Some mulches are used for specific applications while others have many uses. Mulch types are described below.

Inorganic Mulches

Plastic

Plastic is available in different thicknesses and colors. Black plastic can increase soil temperatures by 5°F and effectively controls most weeds because light cannot reach the seedlings. Clear plastic can increase soil temperatures 10°F or more. Clear plastics are used in warmer climates to pasteurize soils (solarization) prior to planting. This is not done very often in Nebraska because it takes 45 to 60 days for the soil to reach adequate temperatures to destroy weed seed and other pests. Plastics may be used early in the season to increase soil temperatures and extend the growing season or to help ripen fruit. Tomatoes and strawberries are crops that may benefit from increased early soil temperatures. Plastic is not recommended in landscape beds. It inhibits weed growth but will also inhibit the growth of desirable plants. Plastic restricts air movement, water, and nutrients to and from the soil. This can result in extremely dry or wet soil conditions, both of which are detrimental to plant health.

Landscape fabrics

Landscape fabrics are typically a black, woven fabric that contains small holes in the surface to allow air, water, and nutrients to move to and from the soil. They are not aesthetically pleasing by themselves and are typically used with mulches placed on top. Landscape fabrics may inhibit the growth of some rhizomatous and stoloniferous plants. The integrity of the fabric is ruined immediately after cutting it to place plants within the bed. Any soil that is allowed to stay on top of the liner provides a place for weed seed to germinate. In addition, perennial weeds, such as nutsedge and dandelions, often have enough energy to push through the fabric. Organic mulches used on top of the fabric on sloped areas often slide off into unwanted areas. As organic mulches break down on top of landscape fabric, compost is developed, creating an ideal location for weed seeds to germinate. Roots often become intertwined with the fabric, causing difficulties when transplanting.

Crumb rubber

Crumb rubber is a product generated primarily from recycled car tires. Particle sizes can vary. This type of mulch is typically found in turf areas that are subjected to high traffic such as near a cart path or on sports turfs or playgrounds. In high traffic areas it helps reduce soil compaction and improves wear tolerance. It provides padding for both the turfgrass crown and for those using the turf. Crumb rubber increases soil temperatures, which under certain conditions may increase turfgrass stress. Once an area has been worn down, it is difficult to reseed into because of the increased temperatures generated from the crumb rubber. Crumb rubber is difficult to remove from the soil once it has been applied. Its use as a landscape mulch is limited and not recommended.

Rock (lava, river, white, pink)

Rock mulches increase temperatures around plants, resulting in increased plant stress and greater vulnerability to insect and disease problems. In addition, rock mulches may increase the temperatures in outdoor living areas, the cost of air conditioning within adjacent buildings, and glare if mulch is light-colored. Using rocks can also be dangerous since mowers, landscape equipment and children can throw them. Rock mulches are a good choice under down spouts or in dry bed streams to help slow water down and reduce soil erosion and the washing of organic mulches into turfgrass areas. In areas where rock is used, select a color that matches other elements of the house or hardscape.



Rock mulches in a variety of sizes and colors are available.

Organic Mulches

Straw

Straw mulch is unattractive and as a result is primarily used for short-term projects such as seeding turfgrass areas and in vegetable gardens. Straw is used when establishing seeded turfgrass because of its ability to conserve soil and plant moisture. It will decompose quickly once the turf has been established; however, some straw mulch contains high levels of weed seed that may germinate and compete with the turfgrass.

Straw mulches are also used regularly in vegetable gardens to keep fruit from touching the soil, where diseases can affect fruit quality. Straw mulches are typically low in nitrogen and may pull nitrogen from the soil, resulting in nitrogen deficiencies in surrounding plants. Nitrogen should be added to the landscape bed if a deficiency becomes visible. Avoid using straw as a winter mulch; mice and other small rodents may overwinter in it.

Woodchips

Woodchips can come from branches, bark or recycled wood pallets. Different types of wood are available, including pine, cedar, cypress, and pine. Fresh woodchips may contain seeds of trees that can become a weed problem in landscape beds. Bagged woodchips typically do not have a problem with weed seeds since temperatures achieved within

the bag during shipping and storage are high enough to kill any that were present.

Free woodchips are available from many cities. Dyes are available to color woodchips any desirable color. Although it is not believed that woodchips draw termites to a location, they may create access for an existing termite population if woodchips are placed against the foundation. A 6- to 12-inch buffer around the base of the house with nonwhite inorganic mulch will reduce the likelihood of termites invading the foundation.



Organic woodchip mulches are available in a number of different colors.

Corncobs

Chopped corncobs are generally weed free, lightweight and easy to handle. They decompose slowly and can be used around perennials, trees and shrubs. They can be dyed various colors to match other landscape features.

Grass clippings

Grass clippings are typically used in perennial and vegetable gardens. Only clippings from a well-maintained turf should be used. Clippings from turfs that have a lot of weeds will contain weed seeds and may cause future weed problems. Grass clippings should be dried before using. Fresh grass clippings are high in water and nitrogen and will readily ferment. The heat and ammonia that is released from fermentation can damage plants. Grass clippings from turfgrass areas recently sprayed with a herbicide should not be used until the turf has been mowed three times. Grass clippings should be applied in layers no thicker than 1 inch. Thicker layers will impede water and air movement in and out of the soil.

Leaves

Leaves are readily available. They should be shredded and partially decomposed before placed around plants. As with grass clippings, thick layers of leaves may mat down and interfere with water and air movement. Leaf mulches should not exceed 1 inch.

Pine needles

Pine needles are attractive and add fragrance to a landscape. They decompose slowly and therefore do not change soil pH quickly. Thick layers may mat down. Bales of pine needles are becoming more readily available.

Sawdust

Sawdust is readily available but does not make a good landscape mulch. It breaks down slowly and will pull nitrogen from the soil. This may result in nitrogen deficiencies for surrounding plants. Sawdust tends to cake together, causing water to shed rather than soak into the soil. If used, sawdust should be aged one year and not applied in a layer more than 1 inch thick.

Herbicide Use and Mulches

Herbicides can be used in conjunction with organic and inorganic mulches to improve weed control. See NF603, *Consumer Landscape Herbicide List*, for product recommendations suitable for landscape beds. Some herbicides may stain mulches and hardscape features. Use caution when using herbicides in landscape beds where annuals or new plants are being established. Some herbicides may stunt root development if applied before transplants become established.

Soils in landscape beds typically warm up faster than soil under turf. As a result, many summer-annual weeds such as crabgrass and prostrate spurge will germinate 10 to 14 days earlier in landscape beds than turfgrass areas. A preemergence herbicide should be applied to landscape beds in mid-April, prior to adding mulch, if needed. Preemergence herbicides can also be added to the top of the mulch and then watered into the soil. Use a minimum of 1/2 inch of irrigation to ensure the herbicide is moved into the soil. University research has shown that a combination of organic mulches and herbicides offer better weed control than herbicides or organic mulches alone. Read the herbicide label to determine if a product can be safely applied to plants in a landscape bed, and be sure to follow all label directions.

Summary

Mulches are an important component of the landscape. When applied appropriately, they serve many positive functions, including conserving soil moisture, reducing weed populations, moderating soil temperatures, and enhancing plant health. Select the mulch that is best suited for the functional and aesthetic needs of the landscape.

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1995, Revised April 2005

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