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Mulches for the Home Landscape

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This NebGuide evaluates mulching materials, benefits and practices for home landscapes.

Definition

While mulches are not new to landscapes, interest in them is growing as gardeners adopt water conserving and other environmentally sound practices. Mulch is an organic or inorganic material applied to the soil surface during the growing season or applied over the plant during the dormant season. 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, odor-free and stay in place. Also, ideal mulches should not compact or become a fire hazard. Although no single mulch material will meet all these requirements, select one that best suits the needs of your site.

Benefits of a Mulch

- Conserves soil moisture
- Moderates soil temperature by insulating the soil surface
- Reduces soil compaction caused by equipment and people
- Reduces soil erosion from wind or water
- Slowly increases soil fertility through decomposition (organic mulches only)
- Reduces incidence of disease by protecting above-ground plant parts from splashes that carry soil-borne inoculum
- Reduces fruit rot by eliminating contact between fruit and soil
- Reduces winter injury by minimizing temperature variation, reducing water loss in plants, and decreasing heaving of plant crowns and roots
- Aids weed control

Characteristics of Organic Mulches

Most gardeners use organic mulches. These are derived from plant material and imitate naturally occurring forest or prairie litter. Gardeners can develop their own organic mulches by recycling yard waste such as chopped or shredded leaves, branches, wood chips, or grass clippings or they can purchase mulches from garden centers.

An important value of organic mulches is that they continuously add organic matter to the soil surface. Earthworms and other organisms will incorporate this material into the upper soil area. When the planting bed is renovated, the gardener can work this organic mulch into the soil deeply enough to actually incorporate it into the root zone.

Characteristics of Inorganic Mulches

Inorganic mulches include lava rocks, pebbles, plastic, or landscape fibers which neither break down and improve soil structure nor add nutrients to the soil. The physical action of equipment and freezing-thawing cycles can, however, break such material into smaller particles. If a site requires renovation, inorganic mulches can be difficult to remove, while organic mulches can be easily incorporated into the soil.

Dark-colored inorganic mulches, such as plastics, also warm the soil more than organic mulches. Black plastic will raise the soil temperature about 5 degrees higher than uncovered soil. Clear plastic will warm the soil even more, to 10 degrees higher than bare soil.

Plastic is an effective mulch material for some crops, such as strawberries or tomatoes, where the plastic is removed each year. But plastic is not a good mulch for landscape plantings containing trees or shrubs as it restricts movement of gases between the soil and the atmosphere. Since roots require oxygen, an adequate root system to support vegetative growth will not develop under plastic.

Regulation of the proper level of soil moisture is difficult under plastic. A drip irrigation system located under this mulch will efficiently and effectively apply water.

Unlike plastic, landscape fabrics (geotextiles), are porous. Oxygen and other gases and water enter and leave these fabrics, making them a suitable mulch for trees and shrubs.

There are, however, some disadvantages to using landscape fabrics as mulch. For example, when the pores in this fabric become filled with soil or other organic material, weed seed can germinate above the fabric. If you cover the fabric with an organic mulch to hide its appearance and extend its life, the roots of woody plants can become intertwined with the fabric. If you need to move these plants (transplants), considerable root loss can occur. Use an inorganic mulch like pebbles to cover the fabric because roots are less likely to grow into the fabric. Another disadvantage of landscape fabric occurs on slopes because mulch will slide off more easily.

When to Apply Mulches

Growing Season Mulches

Some mulches are intended to function for only a brief time. One example would be a mulch applied to a newly seeded lawn. This mulch reduces loss of soil and plant moisture loss until the turf is established. On steep slopes, mulch can prevent erosion until a new planting is established.

In spring, allow the soil to reach the optimum temperature before applying mulch. For warm-season crops, such as tomatoes, apply mulch when soil temperatures reach 70°F. Cool-season annuals, like pansies, are mulched in early spring, as soon as new growth begins.

In summer, mulching materials low in nitrogen, such as straw or coarse sawdust, should be fortified with a nitrogen fertilizer. One tablespoon of ammonium sulfate per one bushel of mulch, applied once or twice in spring, will prevent yellowing of plant material. Scatter fertilizer uniformly on surface of mulch then slowly water in.

Dormant Season Mulches

Dormant season or winter mulches reduce injury by moderating temperature fluctuation and reducing foliar moisture loss. These mulches reduce frost heaving of the crown and upper roots caused by repeated thawing and

freezing of soil water. In the fall, apply a loose mulch after several hard freezes (temperatures in the 20's). If applied too early, the mulch will delay (retard) the plant processes that allow the plant to tolerate cold temperatures. After mulching, avoid pruning, adding nitrogen, or any activities that stimulate new growth. Rose bushes and strawberries especially need winter mulch.

Remove mulch in spring when new growth is visible. If a late freeze threatens, recover plants.

Thickness of Mulch Layer

With fine organic mulches, such as compost or shredded leaves, maintain a 3 inch layer. For coarse materials, like wood chips, maintain a 4 inch layer. Remember a 4 inch layer will compact to 3 inches. Mulches decompose in time; their rate of decomposition depends on particle size and composition. Plan to add more mulch occasionally, but don't exceed the recommended thicknesses.

Precautions for Special Cases

Use very little, if any, mulch on poorly drained soils. The mulch will keep the soil too wet. This fosters both root rot and growth of toxic compounds injurious to the plants. If mulch must be used in a wet environment, use a coarse textured one.

Grass clippings are an effective mulch but require some preparations before use. Allow the clippings to dry before applying them to your site. Grass clippings are high in water and nitrogen and readily ferment. The heat and ammonia released in fermentation will injure or kill other plants. Before applying the dried clippings, mix them with compost or an organic material low in nitrogen. Do not mulch with grass clippings that have been treated with an herbicide.

Do not use reflective mulches, such as white rock, close to a building. The reflected heat warms the building in summer, increasing the cost of air conditioning and also causing winter injury to plants from unseasonable rapid warming. Be cautious about using a wood mulch near the foundation area of a home. This provides an environment attractive to termites from which the pest can gain access to the home. Use a crushed, non-white rock border to keep wood two feet away from the home.

Mulch Characteristics

<i>Organic</i>		<i>Reapplication Frequency</i>
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PEAT, Coarse textured		
<i>Advantages</i>	<i>Disadvantages</i>	1 year
*Increases water-holding capacity of most soils	*Expensive	
*Over time, could increase soil acidity (generally advantageous for Nebraska's alkaline soils)	*Difficult to re-moisten after it has dried	
	*Repels water	
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WOOD CHIPS/SHREDDED WOOD		
<i>Advantages</i>	<i>Disadvantages</i>	1 - 2 years
*Decompose slowly, improve the soil	*Injury to plants may occur if applied too heavily	Depending on size and type of wood
*Long lasting and attractive	*Wood chips may not cling well on steep slopes	
* Relatively inexpensive and easily applied	*Do not use near foundations of buildings	
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STRAW		
<i>Advantages</i>	<i>Disadvantages</i>	Needs frequent reapplications
*Inexpensive, readily available	*Coarse appearance	
	*May contain weed seeds and some diseases	
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LAWN CLIPPINGS		
<i>Advantages</i>	<i>Disadvantages</i>	1 season
*Readily available, usually free	*May mat down and interfere with water and air movement if applied too thickly	
*Decompose slowly, improve the soil	*May contain weed seeds	
	*May contain herbicides	
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LEAVES		
<i>Advantages</i>	<i>Disadvantages</i>	1 season
*Widely available, usually free	*May mat down and interfere with water and air movement	
*Decompose slowly, improve the soil	*Should be shredded and partially decomposed before using (prevents matting and soil nitrogen binding)	
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PINE NEEDLES		
<i>Advantages</i>	<i>Disadvantages</i>	1-2 years
*Fragrant	*Not always available	
*Decompose slowly, improve the soil	*May mat down if applied too thickly	
*Over time, will increase soil acidity		
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COCA BEAN HULLS		
<i>Advantages</i>	<i>Disadvantages</i>	1 season
*Attractive and fragrant	*Tends to float away during heavy rains	
*Good soil conditioner	*Expensive	
	*Will decompose by mildewing	
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Inorganic

Reapplication frequency

PLASTIC

Advantages

*Completely inhibits weed growth until it tears

*Helps garden beds look neat

Disadvantages

*Cracks easily from low temperatures or ultra violet instability, allowing weed growth

*Expensive

*Allows no water or air to enter or leave soil, stressing roots under mulched plants

*Needs a supplemental irrigation source

Variable

LAVA OR CRUSHED ROCK

Advantages

*Sometimes used to give a formal look

Disadvantages

*Expensive

*Lava is very lightweight; blows, rolls or washes away easily

*Allows weed growth

*More ornamental than practical

Indefinite

NEWSPAPER

Advantages

*Prevents weed germination

*Effective between vegetable rows

*Readily available

*Sterile

Disadvantages

*Can blow away if not weighted down

*Unightly in landscape setting

1 season

LANDSCAPE FABRIC

Advantages

*Allows water and air to permeate

*Durable

*Suppresses most weeds

Disadvantages

*Weeds may germinate on top of fabric

*Cover with light top mulch to prevent fabric deterioration (landscape fabrics that are ultra violet stabilized do not need to be covered)

*May shed mulch cover on steep slopes

Indefinite

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