UC MASTER GARDENERS NAPA COUNTY

HEALTHY GARDEN TIPS

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USING GARDEN MULCHES

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Mulches are applied to the garden surface to cool the soil, reduce water loss and protect against soil erosion. Mulches can be from mineral, organic or manufactured sources. Organic mulches are dead plant materials and decompose into the soil; improving soil physical properties but require regular applications of new mulch material. Coarse textured mulches are more durable, but may harbor snails or undesirable insects, while fine textured mulches may resist wetting. Many people use a combination of plastic mulch next to the soil surface covered with an organic mulch layer on top to improve garden appearance. Some prefer the look of rock mulches.

For Water Conservation

Mulches reduce water loss by cooling the soil surface and restricting air movement near soil. Plastic fabrics last longest, but must be anchored against wind damage. Woven or spun bonded fabrics allow water and air to penetrate more uniformly so are preferred over solid sheets of plastic. Natural materials such as bark, compost and green waste are easier to spread, are not subject to wind problems, and are cheaper. Natural materials must be regularly reapplied to compensate for losses from natural degradation at the soil surface.

For Weed Control

Mulches prevent weed seed growth by preventing light from hitting the soil surface. Both natural and plastic mulches are effective weed control materials. Mulches are not effective against perennial weeds such as bermudagrass, dallisgrass or field bindweed. Weed seedlings that germinate in and on mulch are easily pulled by hand.

For Soil Erosion

Large, bulky materials such as straw, tree wood chips or bark are best and less likely to float away. Large pieces of mulch act as small dams to prevent soil movement. Use in combination with properly designed drain and crushed rock construction to carry water away. For sleep slopes, woven rope matting is available. Mulch is temporary until resident vegetation, or permanent structures replace mulch materials. Thin layers or fine fiber mulches provide little soil protection, but are often to cover seed and fertilizer placed on disturbed areas.

For Soil Improvement Benefits

Natural mulches are very low in plant nutrient content, from 1-3%, but do not provide temporary improvement in soil texture near the soil surface. Extended use of natural mulches in normal garden situations favors high populations of microbes, earthworms and the natural soil food web. Amending garden topsoil with natural mulches generally improves soil oxygen levels, favoring soil microbe populations even further. Surface mulches have little value as plant nutrient sources.

The Down Side

Thick layers of mulch may hide small rodents such as mice and voles, particularly when near food and water sources. Snails, sowbugs and earwigs favor coarse natural mulches in some situations. Fine textured mulches can ‘cake’ and interfere with water penetration. Most mulches support wildfire when dry. Dense woody mulches may harbor termites. Add nitrogen fertilizer when incorporation natural mulches into the soil to prevent plant nitrogen starvation.

ORGANIC MULCHES (Table 7-4, UC ANR Publication 3359)

Bark Chips & Ground Bark	Attractive, slowly improves soil as it gradually decomposes. Can harbor earwigs, termites, sowbugs and other pests. Often placed over plastics as a decorative material.
Wood Chips	Sometimes inexpensive. May contain weed seeds. May not stay in place. May use soil nitrogen as if decomposes. Compost well first or add nitrogen to the soil.
Compost	Excellent source of organic matter, readily available or can be made. May harbor weed seeds if not properly composted. May promote crown disease if applied to contact trunk.
Grass Clippings & Leaves	Readiy available, can be applied often. May contain weed seeds or bermudagrass stems. May reduce water penetration if not dried first. Better if composted before use.
Peat Moss	Increases water-holding capacity if mixed into the soil. Adds acidity to alkaline soils. Contains few or no weeds. Resists wetting when dry, expensive.
Hay & Straw	Allows good water penetration. Looks good. Usually contains grain seed, which may germinate. May use soil nitrogen as it decomposes. Compost well before using or add nitrogen to soil.
Rice Hulls	Benefits soil tilth, slow to degrade. May contain weed seeds unless composted or rolled to crush seeds. May use soil nitrogen as it decomposes. Compost before using to kill weed seeds or add nitrogen.
Leaf Mold	Can add needed acidity to alkaline soils, attractive. Must be carefully prepared, purchased or can be collected.
Newspapers (shredded)	Readily available, inexpensive, no weeds. Attract earwigs and sowbugs. Not stable in windy conditions. Inks may be toxic, do not use around edible plants. Unattractive.
Pine Needles	Adds acidity, readily available. Leachate helps stop weed growth, but it may be toxic to young plants. Suitable only for acidic soil-adapted plant species. Slow to break down.
Sawdust	Improves soil organic content. Inexpensive or free. Will mat and inhibit water penetration. May use soil nitrogen, blows away, and decomposes rapidly. Compost well before using or add nitrogen to soil. May contain organic compounds that can harm young plants.
Pressed heavy fibrous paper for mulching (e.g. Hortopaper)	Good water and air penetration, easy application. Must be purchased. Tends to break or tear after transplanting or if walked on.

NONORGANIC MULCHES (Table 7-5, UC ANR Publication 3359)

Black plastic (polyethylene)	Very effective, easy to handle. Not permeable to air and water. Usually needs drip irrigation. Warms soil somewhat. Breaks down in a few months and is unattractive unless a top mulch is applied. Weeds can grow readily through tears or holes.
Clear plastic (polyethylene)	Performs like black plastic, except that it encourages weed growth unless solarization procedures are followed. Cover with top mulch if not used for solarization. Weeds can grow readily through tears and holes.
Woven polypropylene & nonwoven polyester	Very effective, long lasting. Allows air and water penetration. Expensive, may be unattractive without a top mulch. Brands differ in effectiveness.
Photodegradable plastic	May not need to be removed. Degradation may not be complete. Must be exposed to light to degrade. If exposed to light, not as long lasting as some other materials.
Crushed stone, gravel	Attractive as a top mulch for synthetics. Tends to become weed infested if used alone. May get too hot. Time consuming to remove, expensive.
Roofing/Building Paper	Long-lasting and durable. Unattractive unless a top mulch is applied, expensive.
Used carpet	Long-lasting and durable. Unattractive unless a top mulch is applied. May produce an unpleasant odor when wet.

Additional Reading:

Pests of Landscape Trees and Shrubs, UC ANR Publication #3359, 1994.
The Rapid Composting Method, UC ANR leaflet 212511, 1991
Erosion Control on Bare Slopes Around Your Home, UC ANR leaflet 21137, 1979
Seeding for Erosion Control in Mountain Areas of California, UC ANR leaflet 21356, 1973.

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