

Mulching

Mulching is the process of adding a layer of material to the surface of your garden soil. Whether you grow fruits and vegetables, flowers or perennial ornamentals, mulching is an important way of protecting and improving your soil. Without mulch, the soil surface is vulnerable to erosion, dehydration, loss of structure and compaction. Typical mulch materials range from leaves to straw to living mulches such as wildflowers and clover.

Why Mulch?

Mulching helps protect your soil from environmental factors like rain, wind, sun and human agricultural practices which cause compaction, erosion and nutrient loss. A thick layer of mulch can also help to suppress weeds and raise the soil temperature during the cool shoulder seasons. In nature, soil is almost always covered by either plants, such as in grasslands, or decaying debris, such as on the forest floor. As organic material slowly decomposes, it returns valuable nutrients to the soil.

Protection from Rain

Rain (and irrigation) can cause compaction of the soil and leach away valuable nutrients and minerals, especially during the wet winters on the West Coast. A thick layer of mulch slows the rain down and protects the soil from its impact, while still allowing moisture through to keep the soil and your plants alive.

Protection from Erosion

Excessive tilling and digging common in conventional agriculture and gardening leaves top soil vulnerable to being blown away by wind. Again, mulch protects the underlying soil, while at the same time releasing nutrients and humic acids that help to repair damage done to from too much tilling and digging.

Evaporation Reduction

In the summer, the sun can draw moisture out of the soil at a rate of almost 3cm every day. Mulch acts as a barrier that keeps moisture in the ground.

Temperature Control

Mulch also helps to keep your soil cool in the summer, further helping to prevent evaporation. It is an essential tool for winter gardening, where it insulates the soil to prevent the freezing that can kill fragile plant roots.

Weed Control

Many common garden weeds need light to germinate. Mulching your soil helps prevent light from penetrating to the soil underneath, thereby limiting weeds' ability to grow. Weeds also have a difficult time penetrating thick layers of mulch, and those that do are generally very easy to pull out because they are loosely rooted.

Replenish Nutrients to Plants and Microorganisms

While it slowly decomposes, the nutrients stored within mulch are released for the use of plants and microorganisms. This slow-release fertilizer helps sustain plants in adverse conditions. The increased organic matter being added to the soil also helps improve soil structure.



What to Mulch With?

There are a great variety of materials that can be used as mulch. Some are better suited to weed control, while others are better for returning nutrients to the soil while protecting it from the elements.

- **Thick layers of newspaper or single layers of cardboard** - great first layer to lay down when creating a new garden bed because they block out light more completely than other mulches, suppressing weeds from coming up into your new bed. Use a layer of newspaper at least 4 sheets thick, one layer of cardboard should be fine.
- **Wood chips, bark mulch**- good for suppressing weeds in pathways or around acid-loving perennials such as blueberries. Wood chips will also soak up and retain water, feeding it back to surrounding soil as the soil dries out in warmer weather.
- **Pine needles, sawdust** - can be used around acid loving plants. Use no more than a 1/2 inch layer of sawdust as it can mat and turn anaerobic as well as steal nitrogen from your soil to further its decomposition process.
- **Compost screenings** - Ever wonder what to do with all the coarse bits from screening your compost? Use them as a mulch around woody perennials! They will help to regulate moisture as well provide food for beneficial fungi mycelium.



The straw around these eggplants are preventing moisture loss from the soil in the hot greenhouse.

- **Straw** - very slow to break down, making it a great investment for retaining water in the soil, protecting it from the elements and regulating its temperature.

- **Leaf mold or dried leaves** - add nitrogen to you soil while protecting it from the elements and regulating temperature. Stockpile leaves in the fall when they are readily available along the street (*see Factsheet #6 - Urban Leaves*).
- **Grass clippings (green or dried)** - readily available if you have a lawn. If green, they'll add nitrogen to the soil. Avoid using more than 1 inch at a time as grass tends to clump and can become anaerobic (breed non-beneficial bacteria).

How to Mulch

Mulching is done differently depending on what kinds of plants are in the bed and what you are trying to accomplish with the mulch. Therefore, vegetable garden mulching will differ from mulching around perennials and an entirely different strategy can be used to actually build soil with mulch materials. You can spread mulch over an entire garden bed, or place it in concentrated rings around plants that require a boost of nutrients or some extra protection.

Vegetable Gardens

What? Light mulches like leaves, grass clippings and straw

Why? They decompose quickly to provide nutrients to plants and beneficial bacteria and their fluffy texture won't damage fragile annual seedlings.



These veggies have been tucked in for the winter with a thick layer of leaf mulch.

How thick? 2-4 inches

Other considerations: If you have mulched your vegetable garden over the winter, it is important to pull the mulch aside for a short period in spring to allow the sun to warm up the soil. This will also help reduce slug damage as they can thrive in the spring under a cover of thick mulch. Once the soil has warmed and you have planted into it, you can replace the mulch over top to prevent the soil from getting too hot and losing water.

Perennial Gardens

What? Coarse mulches like straw, bark mulch and compost screenings

Why? Perennial gardens generally contain woody species that benefit from a fungal soil environment. Since the mycelium of fungi thrive on dead woody material, using these as mulch encourages these beneficial microorganisms to breed and grow. Coarse mulches also decompose slowly, providing nutrients to the surrounding plants for a longer period of time, which complements the longer life-span of perennials compared to annuals.

How thick? 4-6 inches

Other considerations: Mulch holds moisture and can rot the wood of trees and other woody perennials if placed directly against their trunks. Ensure there is a 2-3 inch space between woody trunks and stem and mulch.

Building Soil a.k.a Sheet Mulching

Sheet mulching is a technique for restoring depleted or compacted soil to a productive state or building nutrient - rich soil on top of poor soil. It is effective in areas where the soil is infested with pernicious weeds or where the topsoil has been removed. If you plan to convert your lawn to garden, this is the technique to use!

The basic principle when creating a sheet mulch is to mimic the way forests continuously enrich their soils with layers of decomposing organic matter.

Sheet Mulching Steps

1. Weed - Prep the area you want to sheet mulch by thoroughly weeding it. This will go a long way to prevent weeds from popping through.

2. Trench - Dig a 4" deep, 2" wide trench around the perimeter of your sheet mulch area.

3. Flip Sod - If you are transforming a piece of lawn into a garden bed, it is best to flip the sod upside down to suppress the grass from growing through your sheet mulch



4. Nitrogen-rich Layer - Lay down a 2"-4" nitrogen-rich layer like chicken manure, coffee grounds or fresh grass clippings. The higher the nitrogen content the better – the heat from the nitrogen will burn any weeds left

in this bottom layer.

5. Weed Barrier Layer - A thick layer of newspaper (at least 4 sheets) or cardboard goes down next. Tuck the ends of this layer into the trench you dug previously to further prevent weeds from popping through your sheet mulch. Thoroughly wet this layer to help it begin to interact with the green layer below it.



6. Carbon-rich Layer - A 2"-4" carbon-rich layer like leaves or straw goes on next, again thoroughly water this layer to kick-start the decomposition process.

7. Keep on layering - You can leave off layering here, or continue to layer nitrogen and carbon-rich materials to create a deeper soil profile. Finish the sheet mulch with a carbon-rich layer.

Remember that the layers will decompose to roughly half their height, so if you are wanting a deep soil profile, layer up high!

8. Plant - If you want to plant into the sheet mulch immediately, cut a hole through the weed barrier layer to access the soil underneath.



Timing - Sheet mulching can be done at any time of the year, but autumn works best because rain and materials like leaves are plentiful. As weather and time work on the layers in a sheet mulch, they will decompose into a nutrient-rich soil. The more layers you have the longer it will take to break down, but a simple sheet mulch will get a good start on decomposing if left over a winter.

Ecology - These layers of decaying material attract beneficial soil organisms that will break up the underlying soil (see *Factsheet #8 - Compost Ecology*).



A finished sheet mulch

Living Mulch

Living mulch is another way to achieve the benefits of protecting your soil, while at the same time improving the underground structure and texture of your soil.

Living mulch involves seeding a crop that protects and improves the soil. The crop can either cover the ground in between other plants, or be sown as a cover crop, meaning that it will be cut down before going to seed so that other annuals can be planted in its place. The cuttings can be left on the soil as a regular mulch, or put in the compost to help build soil that way.

Living Mulch Examples

Wildflowers - a swath of mixed wildflowers throughout your perennial garden attracts beneficial insects and self-seeds, so that you won't have to keep seeding each year.



Vetch, winter peas, crimson clover - These nitrogen-fixing annuals will boost the nitrogen content of your soil and can live through winter. Seed in early fall to protect the soil over the winter, cut down once they flower.



Perennial clovers (white and red) - these tough groundcovers will outcompete weeds in a perennial garden. They return year after year, and can become quite dense, so choose a place where you definitely want them permanently.



Strawberries - Not only will these densely-growing berry bushes protect your soil, but they'll produce delicious food for you too!



As you can see from the examples above, you can get creative with what you choose to plant to protect and improve your soil. For vegetable gardens, it's best to choose annual varieties that can be easily managed or removed in between your veggie rows. For perennial gardens where you are disturbing the soil less frequently, choosing a groundcover that will come back year after year will save you a lot of time and energy that would otherwise be spent weeding and watering!



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