

Mulches for home gardens and plantings

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Mulches for home gardens, flower beds, and landscape plantings are becoming more and more popular. Any material that covers the soil surface around and under plants to protect and improve the area is considered a mulch.

Mulches perform many functions:

- Mulches help control weeds by preventing and slowing weed seed germination. They also smother many small, actively growing weeds.
- Mulches regulate soil temperature. This is extremely important to some plants as they grow. Depending on the mulch, soil temperature under mulch may be warmer or cooler than that of bare soil.
- Mulches help retain soil moisture by decreasing evaporation from the soil surface.
- Mulches reduce soil erosion and crusting by providing a covering for the soil surface, so that rain water strikes the mulch rather than splashing directly on the soil surface and running off.
- Mulches protect plants from pathogen inoculum that can be splashed up from the soil and protect vegetables such as cucumbers from decay by preventing fruit contact with bare soil.
- Some organic mulches protect many perennial plants during the winter.
- Finally, most mulches improve the appearance of any planting site when properly used.

Types of mulches

The majority of mulches can be divided into two groups—organic mulches and synthetic mulches. Organic mulches are made up of plant material such as peat, wood shavings, bark (chips, shreds, chunks, or nuggets), straw, hay, ground corn cobs, leaves, compost, sawdust, lawn clippings, pine needles or boughs, peanut hulls, and cocoa bean shells. Inorganic or synthetic mulches include clear or black plastic, heavy duty aluminum foil, tarpaper, carpet pieces, and spun or woven polypropylenes.

In some instances, inert mulches such as gravel and pebbles are used, often with a synthetic mulch.

Organic mulches

In summer, organic mulches tend to buffer soil temperature by keeping the ground cooler in the daytime and warmer at night. On the other hand, organic mulches usually keep the soil temperature warmer in winter than that of uncovered soil. They also add organic matter to the soil and do not have to be removed at the end of the growing season or before tilling.

One drawback of organic mulches is that you may see increased slug problems, especially in damp weather. If problems persist, you may have to remove the mulch. For more information on slugs, check Extension publication *General Plant Disorder: Slugs* (A3186). It is available from your county Extension office.

Synthetic mulches

Unlike organic mulches, synthetic mulches keep the soil temperature warmer than bare soil in the summer—how much warmer depends on the material. Clear plastic warms the soil the most, with soil temperatures averaging 9°F higher than uncovered soil. Black plastic warms the soil about 5°F higher than bare soil, and carpets and spun and woven polypropylenes raise soil temperatures approximately 2°F.

The major difference between polyethylenes (plastics) and the polypropylenes is that plastics are impermeable, while polypropylenes have varying degrees of permeability—allowing air and water to penetrate. There are several poly-propylenes currently on the market. An example of a spun polypropylene is Typar or Landscape Fabric by Dupont. Dewitt Weed Barrier is a woven polypropylene. Polypropylenes are used primarily around landscape plantings since polypropylenes last many years (if covered). Fertilizing is easier with polypropylenes than with polyethylenes, but polypropylenes are more expensive than polyethylenes.

Synthetic mulches used around annual plantings must be removed at the end of the growing season. This may be a nuisance, especially if the materials are brittle and easily torn due to disintegration from the sun's ultraviolet rays.

Applying mulches

Organic mulches

Place organic mulches around annual plantings (vegetables and flowers) only after the soil has warmed up. Applying organic mulches too early in spring will keep the soil cold longer and slow plant growth. In Wisconsin, apply mulch about mid- to late June unless your soils are sandy. Sandy soils warm up more quickly than heavy clay or prairie soils. You can usually apply organic mulches around crops growing on sandy soil in mid-May.

Apply most organic mulches 3 inches deep over the soil and around young plants. Vegetables grown from transplants should be mulched sparingly (about 1 inch) when they are young, and then you should gradually increase the mulch depth to 3 inches as the plants grow taller. Mulch low-growing plants such as lettuce and radishes on either side of the row, but at a depth of only 1½ to 2 inches. For vining plants such as cucumbers and melons, mulch the entire area over which vines will grow to reduce losses from rot diseases which occur when the fruits lie on the ground.

Organic mulches also help protect roses, strawberries, and prized perennial plants from severe cold weather and frequent freezing and thawing in winter. Mulch perennials in the fall after several freezes (usually about Thanksgiving).

For strawberries, completely cover the plants with about 4 to 5 inches of straw, marsh hay, or similar material. Remove the mulch in spring when leaves begin to show a yellowish tinge. To mulch roses and other perennial plants, pile about 8 inches of straw, marsh hay or similar material around the plant crown. Again, remove the mulch in spring when new growth begins.

The following list describes specific organic and inert mulches:

- **Peat moss** Sphagnum peat moss, although more expensive than Michigan peat, will last longer and is a better buy for the money. If you use acid peat, you may have to add ground limestone to correct the pH.
- **Chipped or shredded bark** You can use chipped or shredded bark anywhere, but it can be expensive and is usually used only in landscape plantings.
- **Leaves** Leaves will work as mulch, but have a tendency to blow away on windy days and may become too compacted. They are best when composted.
- **Compost** Compost is decayed organic matter that is dark brown and crumbly. You can make it at home by piling plant refuse—such as leaves, grass clippings, hedge trimmings, hay, and straw—in 12-inch layers with 1 inch of garden soil and 1 to 2 tablespoons of commercial fertilizer sprinkled between. Make a slight depression at the top of the pile so it stays moist. Mixing once or twice during the season hastens decay. Compost started in early summer will usually be ready to use by late fall.

- **Straw or hay** Apply these mulches deeper than other organic mulches (about 4 to 6 inches), since they pack down. Additional fertilizer applications also may be needed. Mix in ½ cup of a commercial fertilizer such as 5-10-10 for each bushel of mulch.

- **Grass clippings** Apply grass clippings loosely to avoid packing and apply extra fertilizer as recommended for straw and hay mulches. Do not use grass clippings if lawn has been treated recently with a herbicide.

- **Gravel or pebbles** Used in landscape plantings, gravel or pebbles are often used with a synthetic mulch.

Synthetic mulches

Synthetic mulches should be applied at planting time or up to 2 weeks before planting. Early application is especially effective with the polyethylenes (plastics) since they have the greatest warming effect on soil temperature. When using plastics, make sure the soil moisture is at an optimum level before application because plastics are impermeable. Soil that is either too wet or too dry when you apply a plastic mulch will probably be too wet or dry throughout the season.

Before laying synthetic mulches, fertilize your soil with 3 to 4 pounds of 5-20-20 fertilizer per 100 square feet (for vegetables) or as recommended by a soil test. At least two-thirds of the fertilizer should be broadcast before tilling or spading in the spring, and then rake the rest in lightly before applying the synthetic mulch.

After fertilizing and when soil moisture is at an optimum level, dig a trench parallel to the planting row with a hoe and insert about 3 inches

of the long edge of the plastic into the trench. Anchor the edge securely with soil. Wind will pull up an entire sheet of plastic if it isn't anchored securely. Do the same for the other side of the plastic and for both ends.

In lawns or flower gardens, use a lawn edger to make a slit in the soil to place your polyethylene or polypropylene mulch. Pack the soil down again after anchoring the mulch.

Plastics and the polypropylenes come in various weights or mils (thickness). Generally 1½ mil plastic works well for annual plantings. Heavier or thicker mulches are more expensive and usually only needed to reduce problem weeds such as quackgrass around perennial plantings. Most plastic comes in widths of 4 feet, allowing a bed width of about 3 feet.

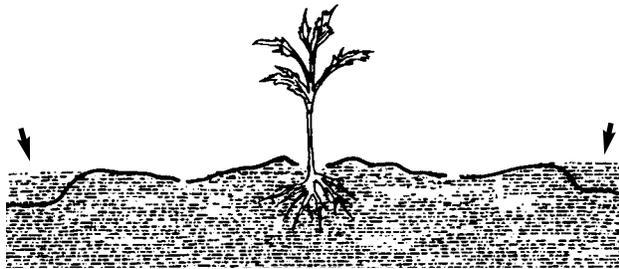
As discussed earlier, various synthetic mulches have different capacities to increase soil temperature. Since clear plastic has the most warming effect on the soil, it is often recommended as a mulch in locations with a relatively short growing season or for use with crops that require especially long growing seasons. In northern Wisconsin, clear plastic works effectively for warm-season vegetable crops such as eggplant, tomatoes, and peppers.

However, clear plastic does not control weeds, so it is most effective only during the first 6 weeks of plant growth. If weeds become a problem by that time, cover or remove the plastic and use another form of weed control.

Planting. How you plant when synthetic mulches are used depends on mulch type and the plants. Generally, heavy mulches such as tar paper or carpet are placed around the crop after planting. You can anchor the mulch with 8- or 9-gauge wire shaped like a bobby pin.

In addition, if you're only planting one or two large plants, you can apply synthetic mulches after planting.

Most of the time, however, synthetics are laid in long strips before planting. To do this, first check to be sure the ground is level. Measure the area to be covered, cut mulch to appropriate length (allowing extra material at the ends for anchoring), and lay mulch. Tear or cut holes in the mulch about 6 inches across wherever you want the plants or hills to go (about 2 feet apart for tomatoes and 3 to 4 feet apart for vine crops), then plant.



Securely anchor mulch on row edges and ends with soil.



Tear or cut holes in synthetic mulch for planting.

For transplants, dig a hole, place the transplant in it (remove the pot or other container), cover the roots with soil, and then use a starter solution high in phosphorus to water the plants.

For seeds such as squash, tear a hole in the mulch and then plant the seeds in a hill (three to six seeds per hill). Be sure to anchor the mulch around the hill with dirt clods, stones, or loose soil.

Large plants should be planted in the center of the mulch at recommended spacings. You can plant smaller plants, such as peppers and eggplant, in two staggered rows on the mulch.

One way to punch through the plastic is to use tin cans with sharpened edges. You can even mount the tin cans on sticks for easier use. A small tin can may be used to punch holes 8 inches apart for lima beans. Do not remove the mulch until after harvest.

Watering. If you use plastics rather than the permeable mulches, you can water plants by placing a soaker hose or trickle irrigation tubing under the plastic when you lay it. Garden sprinklers also can be used.

After a rain, check the plastic to see where the water puddles. Then punch a hole through the plastic with your finger or a stick wherever you find standing water. This allows the water to drain through the plastic during future rains.

Mulch combinations

Mulching landscape plantings and flower beds is similar to mulching a vegetable garden. Apply 3 inches of organic mulch around and under plants. For permanent landscape plantings, use mulches that do not decay or that decay slowly over a period of years—such as pebbles, gravel, bark chips, and shredded bark. These mulches are expensive, but they do not need to be replaced each year and they lend a polished appearance to the area. Many times these long-lasting mulches are combined with synthetic mulches, especially the polypropylenes. This is done by placing a long-lasting mulch over the synthetic material.

Selecting mulch types for crops

Since organic mulches tend to keep soil temperatures relatively cool, they work best for cool-season crops. These include asparagus, beets, broccoli, Brussels sprouts, cabbage, carrots, cauliflower, collards, kale, kohlrabi, lettuce, mustard, onions, peas, potatoes, radishes, rhubarb, salsify, spinach, and turnip.

On the other hand, synthetic mulches usually elevate soil temperatures and thus work best with heat-loving or warm-season crops. They also are used primarily with plants grown in hills or spaced several inches apart. Examples include cucumbers, eggplant, lima beans, muskmelon, okra, peppers, pumpkin, squash, tomato, and watermelon, as well as strawberries and roses.

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