

Mulch: Using Colored Plastic Mulches in the Vegetable Garden

As you've been flipping through the pages of all the gardening and seed catalogs that landed on your doorstep this winter, chances are you've seen a page or two dedicated to plastic mulches in every color of the rainbow. Plastic mulches, particularly black, white, and clear, are nothing new in the commercial vegetable production arena. However, it is fairly recently that these and other colored mulches have made their way into the realm of home gardening. Plastic mulches offer a variety of benefits: they can extend the growing season by warming garden soil, they can improve weed and insect management, they can help retain soil moisture, and they can increase crop yields and quality. Black, white, brown, red, silver, green, or blue--which color is best? That depends on the crop(s) you're growing and the effect(s) you desire from the mulch. And because research on colored mulches is not entirely conclusive, most of these plastics are sold with a "for trial use only" caveat.

Mulches by Color

Black—The most widely used, available, and inexpensive of the colored mulches, black plastic mulch has excellent weed suppression ability because of its opacity. It is also useful for warming soil during the growing season, particularly if as much of the plastic as possible is in contact with the soil below. Research at Penn State has shown that soil underneath black plastic can be up to 5 °F warmer at a 2-inch depth and up to 3 °F warmer at a 4-inch depth than uncovered soil at the same depths. This means that plants can be set out earlier than on bare soil, and may result in earlier maturing fruit. For example, collaborative trials between US Department of Agriculture and Auburn University indicate that okra crops mature earlier with higher yields on black plastic than on bare soil. (Blue and red plastic also work well for okra.)

White—White plastic may be of less interest to us cool-weather, short-season gardeners in Massachusetts since it tends to keep soil temperatures cooler rather than warming the soil as does black plastic. The benefits of white plastic in keeping weeds at bay, retaining soil moisture, and keeping the soil cool around the roots of crops such as peas, broccoli, cabbage, and cauliflower may be more easily and inexpensively achieved with a biodegradable mulch, e.g., straw.

Brown—Brown Infrared Transmitting (IRT) plastic mulch is a fairly recent innovation. It warms garden soil better than black plastic early in the growing season and also controls weeds. IRT is a technology that combines the weed-suppressing properties of black plastic with the heat-absorbing qualities of clear plastic. (Clear plastic is better at warming soil than black plastic but does not control weeds as well.) But be warned—not all brown plastic on the market is IRT, according to University of Vermont Extension.

Red—Researchers at the USDA and Clemson University noted that certain crops performed better when grown in red mulch as opposed to black mulch: tomatoes, which yielded 20% more fruit; basil, the leaves of which had greater area, succulence, and fresh weight; and strawberries, which smelled better, tasted sweeter, and yielded a larger harvest. Penn State researchers found yield increases for tomatoes and eggplants on red mulch compared to black.

Anecdotally, gardeners in Berkshire County saw marked increase in overall plant size, fruit size, and yield of tomatoes, eggplant, and peppers when plants were grown in red mulch as opposed to straw mulch.

Green—Green IRT mulch has been shown to encourage earlier ripening and greater yields of cantaloupes in trials at Penn State and at the University of New Hampshire, where IRT mulch was developed. As with brown plastic, look for the IRT designation on green mulch for sale by garden suppliers.

Blue—Researchers at Penn State found that cantaloupes, summer squash, and cucumbers all produced significantly more fruit when plants were grown in blue mulch as compared to black mulch.

Silver—Reflective silver mulch is useful as a deterrent to aphids (and the viral diseases they carry) and whiteflies, according to researchers at the University of California’s Kearney Agricultural Center. It has also been shown to reduce the number of cucumber beetles present on cucumber and squash plants in studies at Virginia Tech. And silver mulch has potential benefits for pepper crops: at Penn State, bell peppers grown on silver mulch yielded an average of 20% more fruit than peppers grown on black plastic.

Reuse, Recycle, or Rethink?

As an environmentally conscious gardener, you might be thinking, “Using plastic in the garden isn’t particularly sustainable or environmentally friendly.” True, if you have to pull up and throw out yards of plastic year after year. However, some mulches are sturdy enough to be used again, if treated with care—a gardener in my neighborhood gets 2 to 3 years out of her red mulch. Some states actually have plastic mulch recycling programs, and as the popularity of mulches grows, these programs will likely become more available in Massachusetts. Another option that is being investigated is the use of biodegradable plastic mulch. Research at Cornell University suggests that biodegradable mulch works as well as black plastic in terms of warming soil and increasing crop yields. Made from corn starch and other biodegradable elements, biodegradable plastic mulch is currently available from nursery suppliers in black and clear.

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