Black or blue? Mulch color affects okra growth, yield

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Plastic mulches have been used in vegetable production in the United States since the 1950s. Black plastic (polyethylene) mulch, which alters the plant's growing environment by generating warmer soil temperatures and holding more moisture than bare soil, is the standard mulch used in vegetable production. A new research study evaluated the effects of colored plastic mulches with and without row covers on growth and earliness of fruit production on okra. According to the report in the latest issue of *HortTechnology*, the color of mulch used produced significant differences in okra growth and yield.

Previous research studies indicated that using black plastic instead of bare soil results in higher yields, earlier harvests, and cleaner fruit attributed to soil temperature and moisture differences. Other mulch colors have also been used successfully; white plastic has been shown to generate cooler soil temperatures than black, and is preferred during the summer growing season in warmer regions because of its ability to maintain soil moisture.

To test the effects of mulch color on okra, Garry G. Gordon of the U.S. Department of Agriculture's Agricultural Research Service and colleagues from Auburn University's Department of Horticulture grew the vegetable, direct-seeded in single rows, on sandy loam soil in Shorter, Alabama. Treatments consisted of five mulch colors: black, white, red, silver, and blue installed either with or without spun-bonded row cover. Soil temperatures were 4 to 7°C lower than air temperatures in all treatments.

The use of darker-colored (black, blue, and red) plastic mulches increased early and total yield of okra compared with bare soil with and without row cover. Increased soil and air temperatures did not always correlate to an increase in yield, however. "From the results, we can conclude that the use of dark plastic mulch is advantageous to growers of okra in climates that do not have cool springs", Gordon noted. Early yield was generally greatest with dark mulch colors and the combined total yield was greatest when black and blue plastic mulch were used.

Another dimension of the study involved the use of floating spun-bonded polyester row covers. Row covers have been shown to alter other vegetables' microenvironment by increasing temperatures for the crop during the day and into the night. In the okra study, plants grown in soil under a row cover were taller and generally more robust than plants grown without row covers. Marketable yield was greater with the use of a row cover, but early yields were reduced by the presence of row cover—an outcome the research team attributed to the high air temperature in late May during the study.

Data analysis revealed no significant economic advantage to using either blue or black plastic mulch for growing okra. The report noted that "the positive (economic) effect may be more pronounced with leafy vegetables". The scientists recommended that more research be done to determine what effect row covers with various colored plastic mulches have on the earliness and production of vegetable crops.

More information: The complete study and abstract are available on the ASHS HortTechnology electronic journal web site: horttech.ashspublications.org/ … nt/abstract/20/1/224

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