

Color test enhances tomato analyzer software

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When it comes to fresh vegetables and fruits, color is one of the best indicators of quality. Along with texture, size, and flavor, color plays an important role in the business of horticultural crop production and marketing.

In tomatoes, for example, color and color uniformity contribute directly to quality and marketability. The presence of yellow shoulder disorder, or YSD, a ripening disorder that results in blotchy discoloration under the skin of the tomato, is a major quality issue.

Color disorders are also an economic problem. U.S. Department of Agriculture (USDA) "grades" are largely determined by the amount of off-color tissue in products, and growers can receive premiums for fruit based on color and uniformity. Discoloration due to YSD also reduces concentrations of nutrients such as lycopene and beta-carotene. Clearly, reducing YSD in tomatoes could benefit producers, processors, and consumers alike.

In an issue of the *Journal of the American Society of Horticultural Science* (ASHS) David Francis and his colleagues at The Ohio State University's Agricultural Research and Development Center and the College of Wooster describe the use of a new tool they implemented in the Tomato Analyzer (TA) software called Color Test (CT). This remarkable tool allows scanning devices to be calibrated using color standards. The objective of the research was to implement a new digital image analysis tool.



According to the study, Tomato Analyzer was originally designed to analyze the morphology of tomato fruit. The researchers in this study developed a module for color measurement "to expand the array of objective phenotypic analyses implemented". TACT was applied to fruits and vegetables of various color and color uniformity.

"TACT was designed to be user-friendly with minimum requirements for running it, yet accurate and precise for collecting objective measurements. It facilitates data collection and management, and requires equipment that is relatively more affordable", Francis explained.

Traditional tools used to measure color of vegetables and fruits require extensive environmental control, especially for the quality and quantity of light, shadow, and reflection. In contrast, the flatbed scanners used in this study required only a cardboard box as a cover to minimize the effect of shadow.

TACT was able to accurately capture and describe the characteristic color for each crop when applied to other fruits and vegetables of varying colors and color uniformity. Color uniformity was also well characterized for fruit that tend to have nonuniform pigmentation, such as strawberry. TACT proved to be a reliable, precise, and affordable method for digital image analysis of color

The study authors envision that TACT could be used not only in color analysis of fresh crops, but perhaps to evaluate discoloration of food after processing or cooking in food science applications.

<u>More information</u>: The complete study and abstract are available on the ASHS J. Amer. Soc. Hort. Sci. electronic journal web site: <u>journal.ashspublications.org/c ... t/abstract/133/4/579</u>



Source: American Society for Horticultural Science

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