

Monitoring mature tomato (red stage) quality during storage using ultraviolet-induced visible fluorescence image

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Abstract

The potential of UV-induced fluorescence imaging was investigated as a non-destructive tool to monitor postharvest quality degradation of tomatoes harvested at the red stage and stored at 25 °C. The fluorescence images (excitation at 365 nm) were found to be a better indicator of tomato quality degradation than color images after color saturation. Tomatoes were stored at 25 °C for 9 d. The changes in color and fluorescence of tomato were evaluated by two types of images: Color and fluorescence images. A conventional colorimeter was also used for as a reference. Changes in the RGB ratio for these two types of images were opposite. In the color images, the G ratio decreased rapidly for the initial 3 or 5 d and then stabilized afterwards. On the other hand, in the fluorescence images, the G ratio increased continuously up to 9 d. Given that temperature conditions during transportation and storage of tomatoes is not always ideal, the results from this research provide the foundation for developing a postharvest monitoring system of mature tomato quality degradation.