

Color Changes and Quality Maintenance on Tomato (*Solanum lycopersicum* L. cv. Diamante Max) Using a Brick-Walled Evaporative Cooler

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Abstract

Postharvest quality in tomatoes is influenced by temperature and relative humidity. Though expensive, storage in low temperature is the most effective method of maintaining quality of produce longer. Evaporative cooling is a less costly alternative option. A brick-walled evaporative cooling (BEC) system converts warm air from the ambient environment into cold air as it passes through a moistened insulation between the double-walled BEC. The effects of the storage environment in the BEC were evaluated using mature green and breaker stages of tomato cultivar Diamante Max from November 2018 to January 2019. The tomatoes were stored at ambient (27.10 ± 0.67 °C and $81.85 \pm 2.51\%$ RH) and BEC (25.48 ± 0.56 °C and $99.91 \pm 1.54\%$ RH) conditions in. Tomatoes stored in BEC showed 10.36% lesser weight loss, lesser decay incidence, redder color, and better visual quality as compared to fruit stored under ambient conditions. BEC was able to maintain firmness and total soluble solids especially in mature green tomatoes. After 49 d of storage, 61.8% of the fruit stored in the BEC were marketable compared to 23.3% in ambient conditions. When used for a year, the computed benefit over cost value of the BEC storage system was 29.11% higher than the ambient storage system. Thus, the BEC storage system can help maintain the quality of Diamante Max tomatoes during storage in the temperature and relative humidity conditions as above.