

Title Tomato cultivation systems affect subsequent quality of fresh-cut fruit slices.
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Abstract

Experiments were conducted at Beltsville, Maryland, USA, during 1997-99 to compare changes in quality of slices of red tomato (*Lycopersicon esculentum* cv. Sunbeam) fruits from plants grown using black polyethylene or hairy vetch mulches under various foliar disease management systems (no fungicide applications (NF), a disease forecasting model (TOM-CAST) for fungicide application, and weekly fungicide applications (WF)), during storage at 5 deg C under a modified atmosphere. Slices were analysed for firmness, soluble solids content (SSC), titratable acidity (TA), pH, electrolyte leakage, fungi, yeasts, and chilling injury. With both NF and TOM-CAST fungicide treatments, slices from tomatoes grown with hairy vetch (*Vicia villosa*) mulch were firmer than those from tomatoes grown with black polyethylene mulch after 12 days storage. Ethylene production of slices from fruit grown using hairy vetch mulch under TOM-CAST was approx equal to 1.5- and 5-fold higher than that of slices from WF and NF fungicide treatments after 12 days, respectively. The percentage of water-soaked areas (chilling injury) for slices from tomatoes grown using black polyethylene mulch under NF was over 7-fold that of slices from tomatoes grown using hairy vetch under TOM-CAST. When stored at 20 deg C, slices from light-red tomatoes grown with black polyethylene or hairy vetch mulches both showed a rapid increase in electrolyte leakage beginning 6 h after slicing. However, slices from tomatoes grown using the hairy vetch mulch tended to have lower electrolyte leakage than those grown with black polyethylene mulch. These results suggest that tomatoes from plants grown using hairy vetch mulch may be more suitable for fresh-cut slices than those grown using black polyethylene mulch. Also, use of the disease forecasting model TOM-CAST, which can result in lower fungicide application than is currently used commercially, resulted in high quality fruit for fresh-cut processing.