

Thermal indices of upwelling effects on inner-shelf habitats

Juan Pablo Zoffoli, Bernardo A. Latorre, Paulina Naranjo

Abstract

Hairline cracks, which developed after harvest among SO₂-treated table grapes, were characterized by small, fine, longitudinal, cracking lines, almost undetectable with the naked eye. Juice exudation from the cracks resulted in a wet and sticky berry skin. Hairline cracks, which we propose to term 'hairline', were distinctively different from splitting observed before harvest. Hairline was only induced when table grapes were treated with gaseous SO₂, commonly used to prevent decay of table grapes during cold storage in Chile. In practice, conditions that favored higher concentrations of SO₂, such as the use of two SO₂ generating pads (one on top and one on the bottom of the packaged table grapes), promoted hairline cracking. Hairline incidence increased linearly when the concentration and time product (CT) of SO₂ exceeded 3 (mL L⁻¹) h, and no hairline cracking was observed with CT below 0.8 (mL L⁻¹) h. Hairline symptoms were greatly induced on Thompson Seedless table grapes that were immersed in acidic solutions (citric acid and disodium phosphate) at pH 2 or 4. To reduce this disorder, it is essential to use a minimal dose of SO₂ that allows adequate protection from decay without reducing the berry quality. Postharvest practices of table grapes, packaged with a SO₂ generating pad, such as extended delay cooling periods and those practices that involve a raise in temperature, considerably enhance this disorder. Hairline cracking is another expression of phytotoxicity due to overexposure of table grapes to SO₂.

Keywords: Gray mold; Generating pads; Sodium metabisulfite; Grape disorder; Botrytis cinerea; SO₂ phytotoxicity