

Abstract:

California table grapes must be fumigated with 6% CO₂ plus 1% SO₂ for 30 minutes for control of black widow spiders followed by a second fumigation with 40 g/m³ methyl bromide for 2 hours for control of other arthropod pests prior to shipment to Australian markets. The affect of this combination treatment on grape quality has not been fully evaluated. ‘Thompson Seedless’ table grapes were harvested at two maturities and packed into cluster bags and corrugated plastic boxes. One-half of the boxes had an SO₂ pad and liner and the remainder did not. Grapes were fumigated with methyl bromide at 14°C (48 g/m³) or 19.5°C (40 g/m³) for two hours and 6% CO₂ + 1% SO₂ for 30 minutes alone, and either preceding or following methyl bromide fumigation at 19.5°C. Grape quality was measured after simulated air shipment (2 days at 5°C) or sea shipment (21 days at 2.2°C) and after a marketing period (2 days at 20°C). Grape quality was more affected by holding temperature than fumigant treatment. Fruit held or fumigated at 14°C had less berry browning and rachis and stem browning than fruit held or fumigated at 19.5°C, indicating that quality was more affected by exposure to warm temperatures than by the fumigants themselves.