Abstract

Grape (*Vitis vinifera L.*) storage requires stringent control of gray mold caused by *Botrytis cinerea*. The commercial practice is dependent on sulfur dioxide (SO_2) as a fumigant which is applied by various means with well known advantages and disadvantages. Many alternative technologies were developed over the years, most of them with limited efficacy or applicability. Modified atmosphere (MAP) of table grapes suffers from a narrow threshold between control of gray mold and damage to the berries and stems due to high level of carbon dioxide (CO_2) within the film-enclosed package. In addition, the very high humidity inside most polyethylene packages encourages development of *B. cinerea*. We tested a packaging film that was impermeable to CO_2 or O_2, but had differential permeability to water vapor so that relative humidity inside the packages was between 92 and 97%. Control of CO_2 and O_2 levels was achieved by micro-perforation of the packages. The advantage of this plastic film was mainly in its water conductance, which prevented accumulation of free water inside the package. Grapes of cv. 'Superior' were treated with ethanol and then subjected to modified atmosphere using this plastic film. The combined treatment resulted in greater decay control than either MAP or an ethanol dip alone. Over a period of 50 days of storage at 0°C CO_2 levels inside the packages rose to between 6 and 10%. Above 7% CO_2 there was some off flavor in the grapes when they were removed from storage and the bags were opened, but this undesired aftertaste dissipated after 24 h at 20°C. The combination of an ethanol dip with MAP achieved persistent control of gray mold without injury to the grapes.