

Abstract:

Controlled atmosphere storage is used to extend the marketing season of highbush blueberries (*Vaccinium corymbosum* L.). To optimize fruit quality, the effects of CO₂ concentration on fruit quality must be understood. Therefore, 'Burlington' blueberries were held in atmospheres of 0, 10, 15, 20, or 25 kPa CO₂ with 15 kPa O₂ and stored at 0 °C for 3, 6, or 9 weeks. Fruit quality was evaluated after each removal. Decay was inhibited by CO₂, but concentrations of CO₂ > 15 kPa caused softening and flesh discoloration. Soluble solids and titratable acids were not affected by the storage atmospheres. After 6 weeks of storage, concentrations of ethanol and ethyl acetate were about 18- and 25-fold greater, respectively, in fruit held in 25 kPa CO₂ than in those held in 0 or 15 kPa CO₂. Concentration of methyl acetate and methyl butanoate were reduced in fruit stored in elevated concentrations of CO₂. Concentrations of other volatiles were not affected by storage atmosphere. Sensory evaluation of fruit stored in 0 or 15 kPa CO₂ indicated that after 6 weeks the fruit held in 15 kPa CO₂ were softer and less flavorful. The optimum atmosphere for the storage of 'Burlington' blueberry fruit at 0 °C and 15 kPa O₂ was found to be 10 kPa CO₂ in which fruit maintained good quality for over 6 weeks.