

Abstract

In a 6-month CA-storage experiment the effect of changing storage conditions on respiration and sugar and acid metabolism of apple fruit, cv. 'Golden Delicious', was tested. In one case the O₂ concentration was 1% combined with 1°C or 4°C along the whole storage period. The CO₂ concentrations, however, were changed in different storage containers during the storage period from a lower to a higher concentration and vice versa. During the first two months the CO₂ concentration were held at 1% or 7%, during third and fourth months at 4% and during the last two months at 7% or 1%, respectively. Respiration measurements of the fruit in terms of O₂ consumption and CO₂ release were performed in weekly intervals during the entire storage period. Changes in sugars (saccharose, fructose, glucose, sorbitol) and organic acids concentrations (malic-, citric-, succinic acid) were observed every second month.

Fruit respiration was a very sensitive indicator for all changes in temperature, O₂ and CO₂ conditions. The metabolism of some sugar and acid components was also influenced by the storage regime in that way, that mainly the decrease in sucrose and malic acid was depending from CO₂/O₂ levels in the first storage period. Higher sorbitol concentrations were found in riper fruits, mainly in those stored under higher temperature. The results confirm that for a good quality preservation of 'Golden Delicious' apple it is better to pull down the O₂ concentrations in the storage atmosphere as soon as possible. Retarded O₂ reduction can be partly compensated by higher CO₂ concentrations in the beginning of storage, which slowed down the metabolic activity of fruits over the whole storage period in general.