

Title Control of the critical oxygen level during dynamic CA storage of apples by monitoring respiration as well as chlorophyll fluorescence

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Abstract

Two methods based on RQ and fluorescence signal F- α monitoring have been tested to detect the critical oxygen concentration known as anaerobic compensation point (ACP) during dynamic CA-storage (DCA) of several apple varieties. Both methods yielded identical oxygen values for ACP. ACPs found were at concentrations as low as 0.2-0.4 kPa, depending on the apple variety. 'Braeburn' with 0.4 kPa exhibited a higher critical oxygen level than the varieties 'Golden Delicious', 'Elstar' and 'Maigold' (0.25-0.30 kPa). After the critical oxygen limit was reached, the oxygen concentration was increased by about 0.1-0.3 kPa above the critical limit. In this way, fruits were held for 200 days at oxygen levels of 0.3 kPa to 0.6 kPa without causing physiological disorders. Fruit firmness values of DCA stored apples were in general significantly higher than those of ULO-stored control fruit after storage for about 200 days.