

Title Respiration rates of fresh-cut bell peppers under supertatmospheric and low oxygen with or without high carbon dioxide

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Abstract

The respiration rates of fresh-cut bell peppers under diverse high and low O₂ levels, with or without 20 kPa CO₂, at 2, 7 and 14 °C, were studied. Weight loss and off-odor development were also monitored. A constant respiration rate of pepper dices throughout 3 days under different conditions was found. Fresh-cut peppers exposed to 0, 0.5, 1, 3 and 9 kPa O₂ (all CO₂-free), and to 0 kPa O₂ + 20 kPa CO₂, had a lower respiration rate than peppers in the range 20–100 kPa O₂ with or without CO₂. Under high O₂, 20 kPa CO₂ increased the respiration rate by about 20–40% compared to that in free-CO₂ atmospheres, this effect being lower at low temperature. High O₂ had little (at 14 °C) or no effect (at 2 and 7 °C) in stimulating both CO₂ production and O₂ consumption compared to normal air. High CO₂ in the range 20–100 kPa O₂ increased the respiratory activity of pepper dices, probably because physiological injury occurred at 14 °C. However, 20 kPa CO₂ combined with superatmospheric O₂ neither induced a poor visual appearance nor off-odors. Consequently 50–80 kPa O₂ combined with 20 kPa CO₂ could be used in innovative modified atmosphere packaging of pepper dices to avoid fermentation and inhibit growth of spoilage microorganisms.