

Title Chlorophyll fluorescence as a nondestructive tool for detection of deterioration of mango in modified atmosphere packaging

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Abstract

Chlorophyll fluorescence was investigated as a possible nondestructive tool to detect injuries caused by low O₂ and/or high CO₂ in mango in a modified atmosphere pack. Mature green fruit cv. 'Nam Dok Mai' were packed in MTEC breathable film or in LDPE film and stored at 20 or 30°C. Chlorophyll fluorescence parameters (F_o-minimal fluorescence; F_m-maximal fluorescence; and F_v/F_m-potential quantum yield), CO₂ and O₂ concentrations in the package headspace, and the incidence of off-odors were determined every two days of storage. Fruit packed in MTEC breathable film reached an equilibrium modified atmosphere whereas those in LDPE film accumulated high CO₂ concentrations after 4 days in storage at both temperatures. F_v/F_m and F_m were lower for fruit in LDPE film than in MTEC film and these differences increased with storage time. Pronounced decreases in F_v/F_m and F_m occurred in fruit packed in LDPE film after 4 days of storage at both temperatures. This was 2 and 4 days earlier than off odor development at 30°C and 20°C, respectively. Chlorophyll fluorescence may therefore be used to predict abnormal changes before the development of detectable physical symptoms (e.g., off odor).