

Title Specific interest of quality determinations and fluorimetries measurements to assess the pear sensitivity to internal disorders

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Abstract

The objective of this work was to relate chlorophyll fluorescence parameters to quality parameters and to analyse their respective potential to detect stress and predict internal disorder occurrence in pears. For this purpose, batches of 400 fruit of 'Williams Bon Chrétien', 'Beurre Bosc' and 'Doyenne du Comice' pears were harvested in Nelson (New Zealand). The fruit were stored immediately at 0°C in air or in controlled atmosphere conditions at 2% O₂ and 5% CO₂. At harvest and after 3, 15, 30 and 60 days in storage, fluorescence parameters (F₀, F_m, F_v and ratio F_v/F_m) were measured using a Pulse Amplified Modulation fluorimeter. The quality parameters measured were firmness, titratable acidity, soluble solids content and starch index. 'Williams Bon Chrétien' pears exhibited higher decrease in F_v/F_m ratio after 30 days of storage. This difference was associated with higher incidence of disorder than in the two others cultivars. The same overall pattern was also found in air storage but with lower disorder incidence compared to CA. 'Doyenne du Comice' and 'Beurre Bosc' pears exhibited few disorders and in general quality parameters did not relate to stress occurrence in the fruit or to internal browning. These results indicate that fluorimetry may be interesting technique to detect stresses in pear. This technique should be used to predict internal disorder occurrence in pear in a better way than with the use of classic quality measurements.