

**Title** Chlorophyll Fluorescence as a Nondestructive Tool for Detection of Atmospheric Stress in Mango during Storage in Modified Atmosphere Packaging

**Author** W. Mekwatanakarn and R. Chairat

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#### **Abstract**

Chlorophyll fluorescence was determined as a possible and nondestructive tool to detect an atmospheric stress (low O<sub>2</sub> and /or high CO<sub>2</sub> injuries) in mangoes stored in modified atmosphere packaging. Mangoes were packed in two types of package (MTEC breathable film and LDPE film) and stored at 20 and 30°C. Chlorophyll fluorescence parameters of minimal fluorescence (F<sub>o</sub>), maximal fluorescence (F<sub>m</sub>) and potential quantum yield (F<sub>v</sub>/F<sub>m</sub>) as well as the incidence of off odors were evaluated every two days during storage. %CO<sub>2</sub> and %O<sub>2</sub> in the package headspace were also determined every two days during storage. Mangoes packed in Mtec breathable film had high gas permeable and created equilibrium modified atmosphere whereas those in LDPE film accumulated high CO<sub>2</sub> after 4 days in storage at both temperature. Chlorophyll fluorescence parameters were lower for mangoes held in the LDPE film than in MTEC film at both temperature and these differences increased with storage time. Pronounced decrease in F<sub>v</sub>/F<sub>m</sub> and F<sub>m</sub> were indicated for mangoes packed in the LDPE film 4 days after storage at both temperatures. In addition, mangoes packed in the LDPE film had developed some off – odors 8, 6 days after storage at 20°C and 30°C respectively. These results indicated that chlorophyll fluorescence may provide a useful tool to detect an atmospheric stress in mangoes stored in modified atmosphere packaging. However, acetaldehyde and ethanol content need to be determined quantitatively to detect off – odors in the package.