

Title Fluorescence imaging to study physiological changes in ‘Conference’ pears during a shelf-life experiment

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#### Abstract

Red-light chlorophyll fluorescence can be used to determine the physiological state of plants and is induced after excitation with UV or blue light. Chlorophyll fluorescence imaging has already proven to be promising to predict fruit quality (Nedbal et al., 2000b) and storage potential (Huybrechts et al., 2003) as well as the incidence of physiological disorders during storage (Ciscato et al., 2001). Two major changes affect the level of chlorophyll fluorescence emission during fruit ripening and senescence. Fluorescence decreases due to loss of photosynthetic competence per unit chlorophyll leading to reduced PSII activity or due to a decrease in chlorophyll content both associated with fruit ripening and senescence (Smillie et al., 1987). In this experiment, a portable chlorophyll fluorescence imaging system build in the laboratory of Molecular and Physical Plant Physiology was used to study physiological changes in ‘Conference’ pears (*Pyrus communis* L.) during a shelf-life experiment. ‘Conference’ pears were bought in a local store and measured during several days in order to detect physiological changes during this period. The results showed that the loss of photosynthetic competence per unit chlorophyll leading to reduced PSII activity or a decrease in chlorophyll content associated with fruit ripening and senescence can be visualised by means of chlorophyll fluorescence imaging. These results are promising and indicate that this system might be used in the future to develop prediction models for shelf-life.