

Title Preharvest light intensity affects shelf-life of fresh-cut lettuce
Author Izabela Witkowska I and Ernst Woltering
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Abstract

The industry of fresh-cut produce is constantly growing due to increasing demand for fresh, healthy and convenient foods. However, processing of vegetables accelerates quality deterioration due to structural, physiological and biochemical changes. Therefore, the value of the produce to the consumer is decreased by negative changes in appearance, texture, flavor and nutritional value. Cultivation practices, such as nitrogen application, light and temperature regimes and, the choice of varieties with a higher resistance to processing might greatly influence the postharvest characteristics of lettuce. In this study, the effect of light intensity during growth on shelf-life of fresh-cut lettuce was examined in different varieties. Plants were grown under controlled environmental conditions with day/night temperature 20°C /15°C, relative humidity of 70% and high ($250 \mu\text{mol m}^{-2} \text{s}^{-1}$) or moderate ($120 \mu\text{mol m}^{-2} \text{s}^{-1}$) photosynthetically active radiation (PAR) provided by white fluorescent tubes, with a 12h photoperiod. The level of chlorophyll differed between light treatments and varieties. The variety with highest pre-harvest chlorophyll content had the shortest shelf life under both light conditions. However, the shelf-life of plants grown under high light was two-fold of the plants grown under moderate light. The shelf life data are supported by chlorophyll fluorescence images. Future research questions will be discussed.