

Enhancing Postharvest Quality and Shelf-Life of Leaf Lettuce (*Lactuca sativa* L.) by Altering Growing Conditions

Authors : Jung-Soo Lee, Ujjal Kumar Nath, IllSup Nou, Dulal Chandra

Abstract : Leaf lettuce is one of the most important leafy vegetables that is used as raw for salad and part of everyday dishes in many parts of the world including Asian countries. Since it is used as fresh, its quality maintenance is crucial which depends on several pre- and postharvest factors. In order to investigate the effects of pre-fix factors on the postharvest quality, the interaction of pre-fix factors such as growing conditions and fixed factor like cultivars were evaluated. Four Korean leaf lettuce cultivars 'Cheongchima', 'Cheongchuckmyeon', 'Geockchima' and 'Geockchuckmyeon' were grown under natural condition (as control) and altered growing condition (green house) with excess soil water and 50% shading to monitor their postharvest qualities. Several growth parameters like plant height, number of leaves, leaf thickness, fresh biomass yield as well as postharvest qualities like fresh weight loss, respiration rate, changes in color and shelf-life were measured in lettuce during storage up to 36 days at 5°C. Plant height and the number of leaves were affected by both pre-fix growing conditions as well as the cultivars. However, fresh biomass yield was affected by only growing condition, whereas leaf thickness was affected by cultivars. Additionally, the degrees of fresh weight loss and respiration rate of leaf lettuce at postharvest stages were influenced by pre-fix growing conditions and cultivars. However, changes in color of leaves during storage were less remarkable in samples harvested from of 'Cheongchima' and 'Cheongchuckmyeon' cultivars grown in excess watering with 50% shade than that grown in control condition. Consequently, these two cultivars also showed longer shelf-life when they were grown in excess watering with 50% shade than other cultivars or samples were grown in control condition. Based on the measured parameters, it can be concluded that postharvest quality of leaf lettuce might be accelerated by growing lettuce under excess soil water with 50% shading.

Keywords : cultivar, growing condition, leaf lettuce, postharvest quality, shelf-life

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