221/B

Development of modified atmospheric packaging to extend the postharvest life of lime (*Citrus aurantifolia*)

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Limes are a small citrus fruit, which have an oval or round shape. Postharvest decay is the major factor limiting the extension of storage life of lime fruits. Major post harvest losses occur due to physiological deterioration, mechanical damages and microbial infestations during transportation and storage in Sri Lanka. Modified atmosphere (MA) are created when fruits are sealed in packages made out of polyethylene films with relatively low permeability to gases. As fruit respires, the O_2 level decreases and CO_2 level increases, thereby reducing the rate of respiration and delaying the ethylene rise. It is important to recognize that while atmosphere modification can improve the storability of some fruits and vegetables, it also has the potential to induce undesirable effects. This study was aimed to determine a suitable packaging material and a storage temperature under modified atmospheric packaging and vacuum packaging to extend the post harvest life of lime. Matured and ripened lime fruits were subjected to various combinations of packaging and they were stored under different temperatures. All fruits were analyzed for physico - chemical characters such as skin color development, weight loss (%), juice content (%), total soluble solids (Brix), titrable acidity (% Total acid) and ascorbic acid content (ppm or mg/L) at 7 days interval. Color development of fruit increased in all treatments. Minimum weight loss was observed in fruits from 50µm LDPE bags and vacuum packed bags under 10 – 15°C storage temperature. 50µm LDPE bags and vacuum packaging were superior in juice content than other treatments. The juice content, acidity content and ascorbic acid content declined in all the packaging and control. Total soluble solid content of the fruits increased slightly but showed a tendency to decrease towards the later part of the storage. Overall results showed that 50µm LDPE packaging was found to be the treatment to prolong the shelf life of both matured and ripen lime fruits up to 60 days under refrigerator temperature (10 – 15°C). Vacuum packaging was found to be a better treatment for ripen lime fruits which could be stored for 60 days but, matured lime fruit could be stored for 30 days under refrigerated temperature storage.

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