

Effect of Wax Coating, LDPE Packaging and Storage Conditions on Prolonging the Shelf Life of Fresh Lime (*Citrus aurantifolia* L.)

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Abstract

The study was conducted to assess the effect of wax coating and LDPE packaging on shelf life, physical appearance and internal quality parameters of lime fruits under cold storage and ambient conditions. Mature green lime fruits were harvested from commercial orchards at Anuradhapura and brought to laboratory within 30 minutes. 1200 fresh lime fruits were divided into 8 lots and each lot contains 150 Lime fruits. Four lots of fruits were dipped in bio-wax formulation for about one minute. Other four lots were remaining without application of bio-wax. Four lots, representing two lots each from with and without bio-wax application were packed using LDPE packaging. The remaining four lots were kept without LDPE packaging. Four lots (with LDPE and without LDPE packaging under the each of bio-wax coating and without bio-wax coating) were kept under cold storage (13°C ±2°C, RH 95%) and other four samples kept under ambient conditions (32°C ±2°C, RH 70%) in medium size plastic crates. Each treatment was replicated in 3 times. Percentage weight loss, percentage decay incidence, fruit quality characteristics (titratable acidity, total soluble solids, fruit firmness and pH), visual quality and peel colour were recorded in weekly interval. Combination of wax coating, LDPE packaging and cold storage was the most effective treatment in maintaining the quality of lime fruits. This effect was significant ($p < 0.05$) as indicated by the lowest percentage weight loss (14.56%) during 8 weeks of storage period than the other treatment combinations. Although weight, firmness, pH, total soluble solids of this treatment remained within average values during storage period while 73% of fruits in marketable condition after 60 days of storage, the peel colour change from green to yellow after 30 days. Quality attributes such as firmness, pH, titratable acidity and total soluble solids had significant difference with other treatments ($p \leq 0.05$). Limes can be stored only 7 days without applying any preservation method in ambient condition while combination of wax coating, LDPE packaging and cold storage method extend the shelf-life of lime fruits up to 60 days.

Keywords: Cold storage, Edible coating, LDPE, Lime fruit, Shelf life

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