

# APPLICATION OF ESSENTIAL OIL INCORPORATED EDIBLE WAX FOR SHELF LIFE EXTENSION OF MANGO AND PAPAYA

Gunasekera M.M.N.P, Gunathilaka, R.M.S, Perera M.G.D.S., Hewajulige I.G.N, Wilson Wijeratnam R.S.  
Industrial Technology Institute, 363, Bauddhaloka Mawatha, Colombo 07. Sri Lanka

## Introduction

In Sri Lanka, postharvest loss of fruits is estimated to be around 30-40 %. This study aims at developing natural product based wax emulsions for use as protective coatings to slow down natural ripening, minimize moisture loss & pathogen infection. Reducing loss of produce and increasing the productivity of cultivations will increase farmer income and the availability of fruits to consumers. The slow release mechanism of the active ingredients in the bio-wax plays a key role in preserving the shelf life by minimizing loss due to disease.

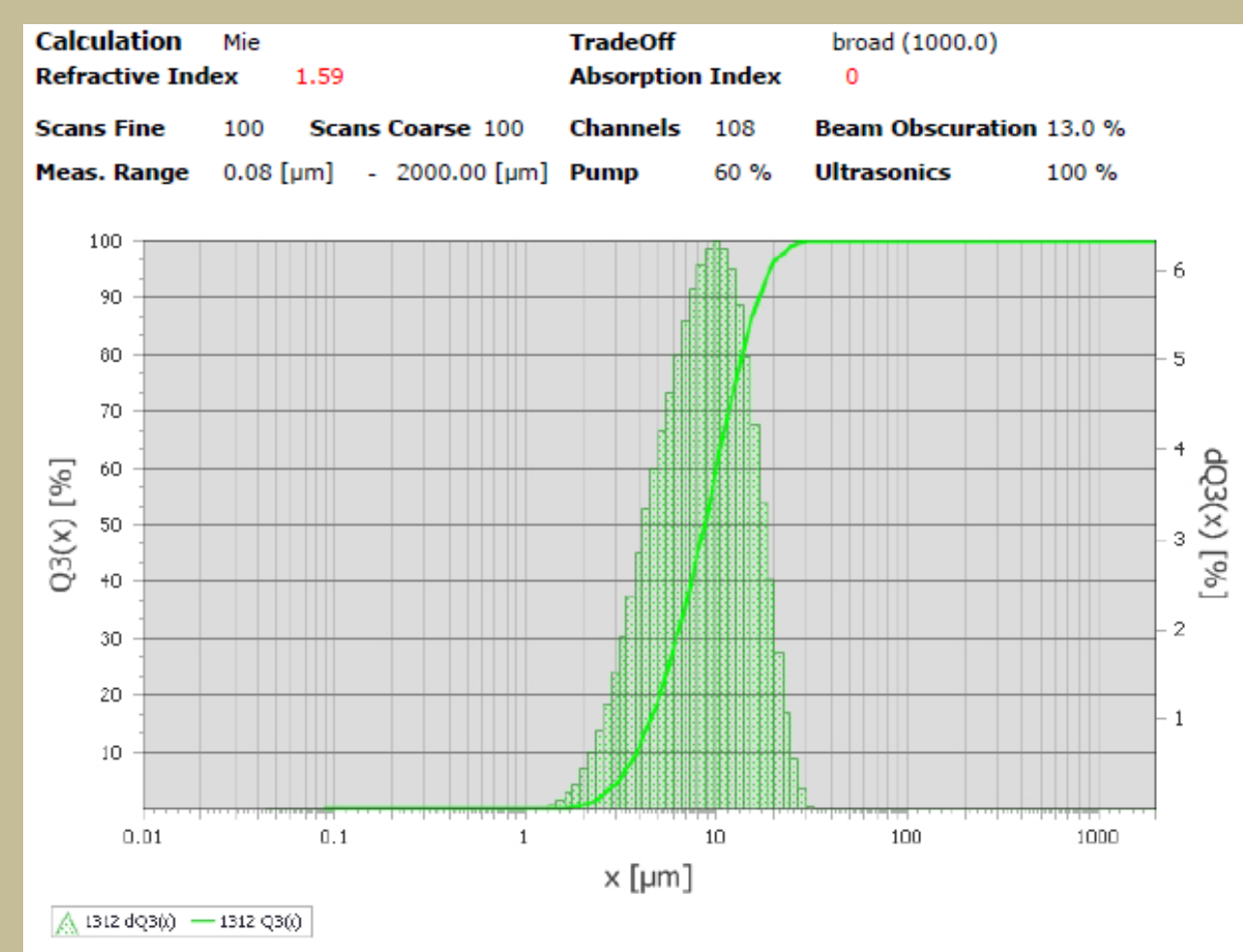
## Methodology

The Bio-wax formulation is a water based emulsion made of bees wax, cinnamon bark oil and other ingredients (Patent Application no 18030). The efficacy of wax application on storage life extension was tested on TJC & Karthakolommbaan variety mangoes and Red lady papaya variety. Randomly selected replicate fruits were dipped in wax for 30 sec., allowed to dry and stored at 13.5°C. Fruit quality parameters were assed after 7, 14 and 21 days storage.

## Wax Formulation



Preparation



Characterization



Lab scale Fruit trials



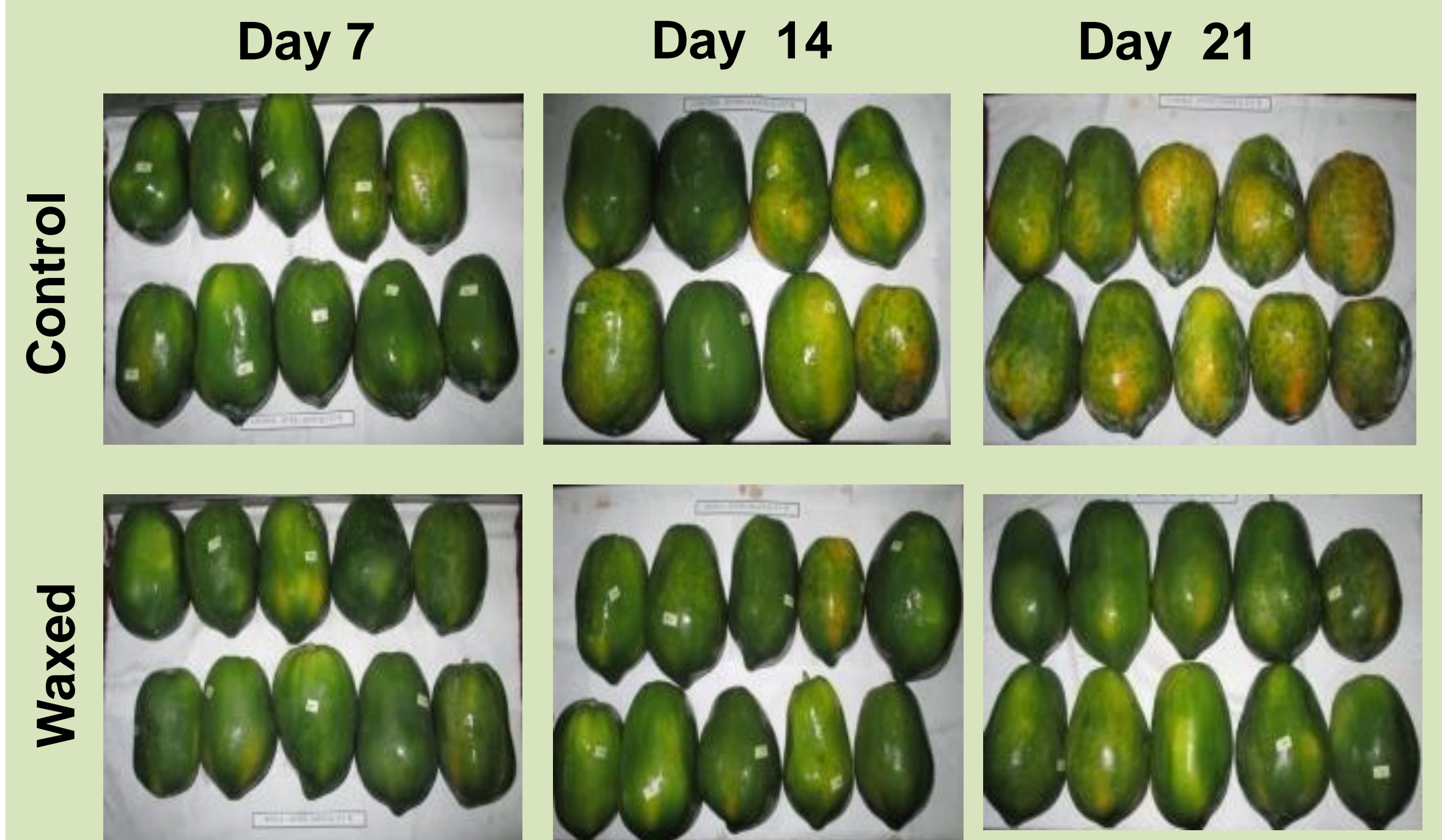
Scaling up

## Laboratory scale fruit trials

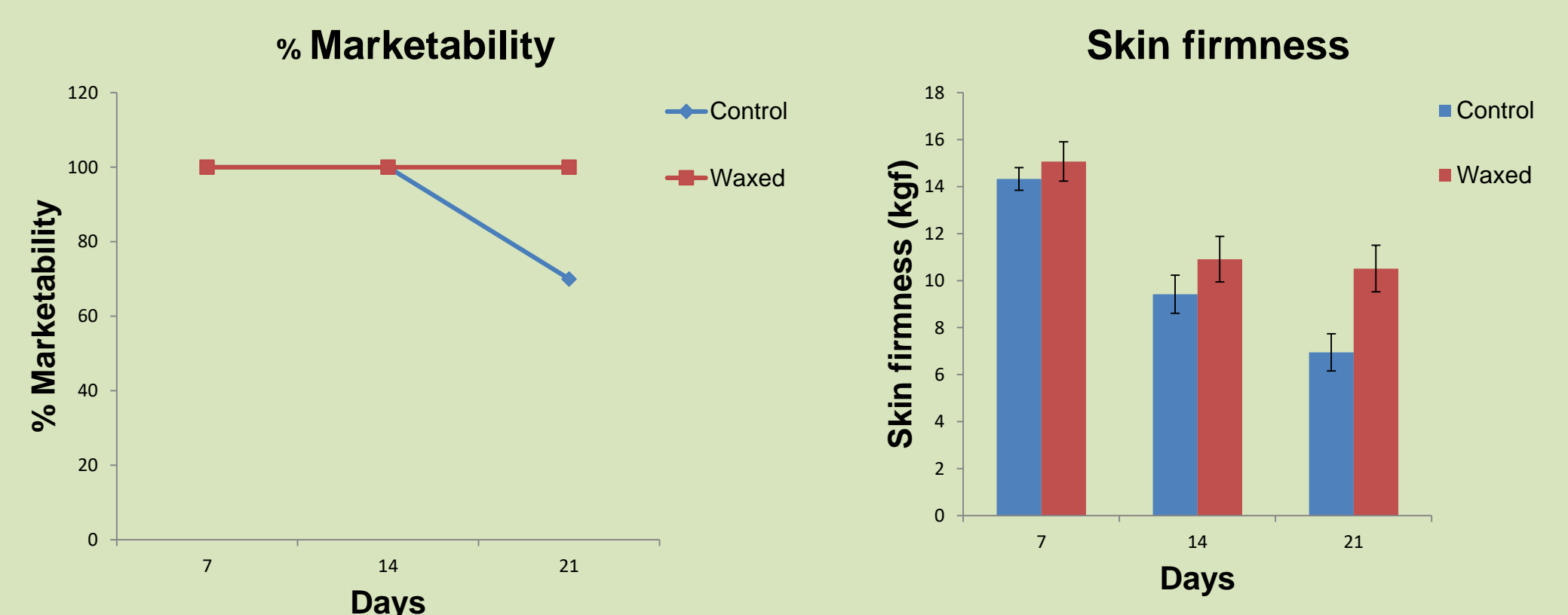
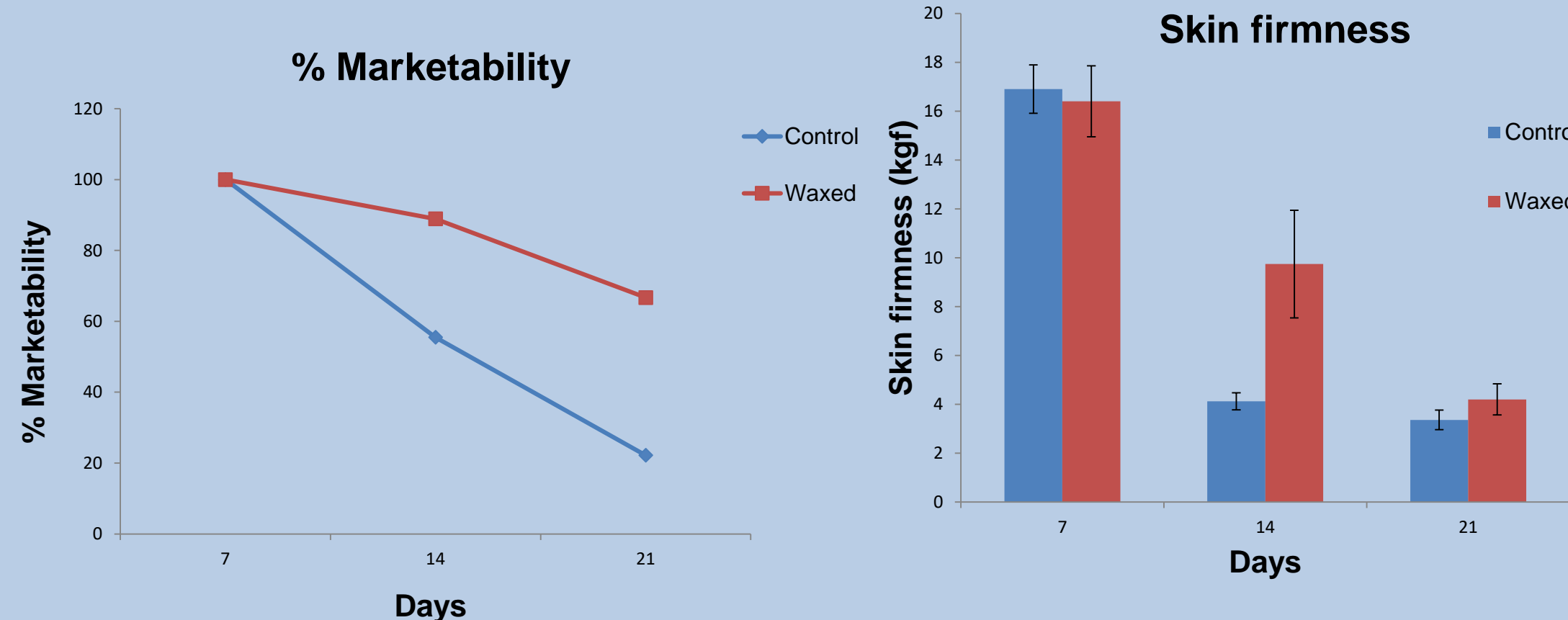
MANGO



PAPAYA



## Results

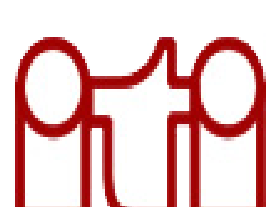


- No significant difference WAS observed with respect to pH, TSS, acidity, flesh & peel color for both TJC & KK varieties of mangoes after 7, 14t & 21 days storage compared to Control fruits.
- Wax treated papaya showed significant improvement with respect to pH, TSS, acidity, flesh & peel color compared to controls after 14 & 21 days.

## Conclusion:

Both mango and papaya varieties treated with wax showed better fruit quality compared to control fruits. Results indicate that storage life of bio-wax treated papaya could be extended for more than 21 days.

Financial support provided by the Government of Canada & IDRC, Canada are herewith gratefully acknowledged.



Global Affairs Canada  
Affaires mondiales Canada



IDRC | CRDI

International Development Research Centre  
Centre de recherches pour le développement international

