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Chapter 4

Post-Harvest Treatments: Way to Safeguard Fresh Produce

Gagan Kumar Panigrahi[1], Niquehat Noor[2] and Kunja Bihari Satapathy[1*]

[1] *School of Applied Sciences, Centurion University of Technology and Management, Odisha, India*
[2] *Department of Botany, Kuntala Kumari Sabat Women's College, Balasore, Odisha, India*
[*]Corresponding author: kbs_bot@rediffmail.com

Abstract

Effective post-harvest techniques allows agricultural sector to fulfil the global demands by retaining the required nutritional quality of horticultural produce. To enhance post-harvest quality of harvested produce, which are in a state of ripening, undergoes senescence and metabolically active must be taken care of by practicing efficient methods, otherwise it would result into significant financial loss. Effective postharvest techniques primarily focus in limiting the rate of metabolic process resulting in delay of senescence, maturation and minimizing the risk of microbial contamination. A variety of management practices including physical, chemical and gaseous treatments have been introduced. Physical treatments include irradiation, edible coatings and heat. Chemical treatments comprise of antioxidants, applying suitable antimicrobials. Temperature management has been a classical practice. This study focus on the prevailing status of post-harvest techniques including the use of ozone and plasma, resulting in maintaining quality and reducing loss of fresh produce.

Keywords: Post-harvest; horticulture produce; irradiation; edible coating; plasma

1. Introduction

Horticultural produce are rich in nutrients, however post-harvest they are prone to various metabolic reactions resulting in their decay. To overcome this situation, well coordination from the level of farmers up to the consumers needs to be maintained. The level of this coordination varies, usually slack at local level and highly complex at global level depending on the ease of adopting efficient post harvesting strategies. According to the Food and Agriculture Organization (FAO), 33% of global food was wasted on the weight basis during 2009 (Lipinski et al., 2013). Essentially, reducing food losses is vital. Quality of fresh produce is highlighted from its flavour, texture, appearance and nutritional value. But, for safety of the consumers it is equally important to make sure that the produce is devoid of any microbial or chemical content. Essentially contamination of fresh produce with pathogens or microorganisms can lead to serious illness (Warriner et al., 2009). Maximum uncertainties lead to spoilage of the fresh produce, thus the role of postharvest treatments becomes critical (Olaimat et al., 2012). Several effective techniques including physical, chemical and gaseous techniques are introduced in order to safeguard the horticultural produce, keeping an eye on maintaining safety and nutritional standards. Maintaining appropriate temperature is equally vital and traditionally being practiced.

1.1. Physical treatments

1.1.1. Heat treatment