



## Review article

# Recent advances on postharvest technologies of bell pepper: A review

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## ARTICLE INFO

## Keywords:

Artificial intelligence  
Edible coating  
Irradiation  
Bell pepper  
Disease

## ABSTRACT

The bell pepper (*Capsicum annuum* L.) is a commercially important horticultural crop grown in tropical and sub-tropical areas across the world. Despite this importance, it is a perishable vegetable with a limited shelf life and high disease susceptibility. Bell pepper output has expanded significantly in recent years. However, this crop is still experiencing close to 40% postharvest losses annually. Chemical fumigation for postharvest disease control of bell pepper has been shown to be efficient against fungal infections, but environmental impact and consumption hazards limit its full use. Recently, non-chemical techniques including biological and botanical methods, non-destructive technologies and Artificial intelligence have been demonstrated to be effective as postharvest management of bell pepper. The paper provides exciting information on recent and emerging techniques for curtailing these losses in bell pepper, alongside their mechanism and existing benefits. The current limitations of these techniques as well as recommendations for potential applications are also addressed.

## 1. Introduction

Bell pepper (*Capsicum annuum* L.) is one of the most economically important horticultural crops cultivated in tropical and sub-tropical parts of the world [1]. Its use and demand have risen in recent years as a result of the significant growth in population and its usage in various meals. Bell pepper has been receiving a lot of attention recently due to its suspected linkages to cardiovascular disease prevention, atherosclerosis, cancer, hemorrhage prevention, slowing of the aging process, avoidance of cholesterol, and enhancement of physical resistance [2]. However, it is a perishable vegetable with a limited shelf life. It is vulnerable to flaccidity, wilting, shriveling, fungal infections, and deterioration as a result of its short shelf life [3]. These undesirable qualities often affect the consumer acceptability of the fruit.

The quality of bell pepper has been maintained throughout storage using various postharvest methods such as chemical and non-chemical treatments [4]. Synthetic compounds have traditionally been used to manage postharvest infections as well as maintain metabolic processes in bell pepper [5]. With the passage of time, bell pepper postharvest preservation techniques had progressed. For example, modified atmosphere, hot water dipping, edible coatings, use of essential oil, and other innovative and environmentally friendly techniques have all been used to help protect bell pepper against spoilage. The use of these treatments has proven to be a viable technique for improving bell pepper fruit quality and preventing postharvest losses during storage. The desire to create

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<https://doi.org/10.1016/j.heliyon.2023.e15302>

Received 12 July 2022; Received in revised form 30 March 2023; Accepted 2 April 2023

Available online 17 April 2023

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