

Title Irradiation treatment for increasing fruit and vegetable quality
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Abstract

Purpose of the review: Postharvest losses of fruits and vegetables can amount to as much as 40% of the harvested mass of produce. Even before harvest, significant insect damage can occur, resulting in even higher crop losses. In addition, disease-causing pathogens that are present at harvest pose a threat to consumers. Food irradiation technology offers a potential solution to these problems. When used in combination with other technologies, irradiation reinforces the overall efficacy of the treatment through synergistic effects. Furthermore, irradiation treatments can stimulate the biosynthesis of bioactive compounds. This paper focuses on the use of irradiation on fruits and vegetables and the associated effects, and examines the potential for using combined treatments to maintain quality.

Main findings: Irradiation is a highly effective treatment that is performed at ambient temperature. It is considered a viable sanitary and phytosanitary treatment for food and agricultural products. Although irradiation is the most extensively studied food processing technology, it is still considered a relatively new technology. It can take a long time for innovative approaches to achieve wide acceptance. Humans fear the unknown and are inclined to resist change. Considerable efforts need to be devoted to public education in this area.

Directions for future research: Although a great deal of progress has been made during the last few decades, new and more efficient irradiation technologies and combined treatments still need to be developed, particularly for sensitive fruits and vegetables, in order to ensure their safety while also reducing process energy consumption.