

Abstract

Treatment of post harvest fruits with ionizing radiation represents an effective way of disinfesting fruits without chemicals or heat. The appropriate application of electrons or x-ray photons from accelerators, or gamma radiation from the decay of Cobalt 60, can achieve complete elimination of all stages of insects in most fruits with minimal physiologic changes to the fruit. Ionizing radiation has been in limited use by the research community and the food industry for decades. Wider use depends on both greater commitment of industry and a greater familiarity by horticulturalists, food scientists and managers who would support, provide technical guidance and give credibility to investors in expanding this capital intensive agricultural infrastructure. The benefits are startling. A small amount of ionizing energy (1.6×10^{-18} Joule) is adequate to break the DNA chain in living material. Insects are either killed outright, or reproductively sterilized, thus allowing export of surplus or specialty fruits with the associated positive economic impact. Additionally, pathogenic bacteria on and in the product are diminished thereby reducing the risk of food poisoning to consumers. Spoilage bacteria are also reduced leading to increased shelf life. Finally, the ionizing radiation can slow the ripening process in climacteric fruit permitting the fruit to be picked near peak flavor and nutritional periods.