

Extension of solanaceae food crops shelf life by the use of elicitors and sustainable practices during postharvest phase

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Abstract

This review focus on the use of elicitors of plant defense for shelf life extension of the four main Solanaceae food crops: potatoes (*Solanum tuberosum*), tomatoes (*S. lycopersicum*), eggplants (*S. melongena*), and *Capsicum* peppers (chillies and peppers). An overview of worldwide production and losses of these cultures from 2006 onwards is provided, along with the current proposals for the mechanisms of plant colonization by pathogens and the induced resistance in the host, as well as the physiology and biochemistry involved in the use of elicitors during the postharvest phase. A search was made on the patents and published papers on this subject from 2015 to 2020. On average, worldwide losses in storing operations may reach 14.16%, 18.96%, and 1.31% for potatoes, tomatoes, and chilli peppers, respectively, while for eggplants, the losses reach 9.85% along distribution phase. In spite of the increase of elicitor utilization, their mechanisms of action and large-scale applicability are still under investigation. It is noteworthy that the number of published research articles is greater than the number of patents related to the subject, which reflects the difficulties involved in technological developments. Biological agents and natural compounds are indistinctly used as elicitors, according to the literature and patents reviewed. The integrated management of the losses during the postharvest phase has seen the successful inclusion of the use of elicitors of plant defense as a promising trend for sustainable agriculture now and in the next years.