

Title Twenty years of postharvest biocontrol research: Is it time for a new paradigm?
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Abstract

The use of biocontrol agents as an alternative to synthetic, chemical fungicides that are presently used to control postharvest pathogens, has many constraints and obstacles that make it difficult to implement their use as a practical control strategy. Over the last 20 years postharvest biocontrol research has evolved towards being more integrated into a production systems approach with greater awareness of industry concerns. More research, however, is needed in many aspects of the science and technology of postharvest biocontrol and in integrating biocontrol agents into combined pre- and postharvest production and handling systems. Better understanding of the mode of action of postharvest biocontrol agents, relationships between infection levels occurring in the field and development of postharvest decay, along with basic information on microbial ecology and survival mechanisms of biocontrol agents on fruit surfaces, is critical for the advancement of successful implementation of postharvest biocontrol technology. The past 20 years of postharvest biocontrol research has seen tremendous advances and the creation of several products. Nonetheless, numerous challenges and opportunities still exist as this field of research matures. This review is an attempt to examine the field of postharvest biocontrol as it has developed over the past 20 years, define the reasons that have limited its commercialization, and identify areas of research that need to be addressed if the potential of postharvest biocontrol is to be achieved. We have also introduced a new paradigm for biocontrol research that may provide new opportunities for increasing the efficacy and consistency of biocontrol products.