Biological control strategy for postharvest diseases of citrus, apples, grapes and strawberries fruits and application in Indonesia

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Abstract	Background In Indonesia, the postharvest fruit loss is 25%, so the economic loss from the export of various fruits is estimated at US$ 58,966,861. One of the causes for the loss is postharvest pathogens. Postharvest fruit rot is caused mainly by fungi, some of which produce mycotoxins harmful to human health. Therefore, in meeting the global food safety requirements, Indonesia should develop a biological control strategy for postharvest fruit diseases. This paper is a review based on observations, a literature review of postharvest biological control of citrus and other subtropical fruits, and an overview of strategies and prospects for their application in Indonesia. Main body The pathogens that cause diseases on citrus fruits, apples, grapes, and strawberries in Indonesia produce mycotoxins, namely Fusarium sp., Aspergillus terreus, Aspergillus sp., Penicillium sp., and Alternaria sp. The potential biological agents are from the yeast group, such as the Candida genera, the bacterial group, such as the Bacillus and Pseudomonas genera, and the fungal group, such as the Muscodor and Trichoderma genera. Conclusion Through mutually additive and synergistic multiple reduction methods in cooperation with the vanguards, postharvest disease control emphasizes disease prevention using several methods. Each method reduces the percentage of damage by a certain amount to produce highly effective controls.
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