

Title Effects of insect quarantine treatments on the quality of horticultural crops
Author Elhadi M. Yahia
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Abstract

Purpose of review: International trade of horticultural commodities has become increasingly important, but phytosanitary restrictions continue to limit its growth. Phytosanitary or quarantine treatments are often required to disinfest host commodities of economically important arthropod pests before they are moved through market channels to areas, in the same country or in a different country, where the pests do not occur. This article reviews the effects of different commercially developed or potential insect quarantine treatments and systems on the quality of horticultural crops, and evaluates the potential of the commercial application of these treatments or systems on the basis of their effect on fruit quality. Quarantine treatments and systems should control insect pests without negatively affecting the quality of the crop.

Recent findings: The increase in the demand and, thus, in the export of fresh horticultural crops, and the increased restrictions on the use of chemical fumigants as quarantine treatments, have increased research activity geared towards developing different physical quarantine treatments and systems. As a result, several quarantine treatments and systems have been developed using low and high temperatures, modified and controlled atmospheres, irradiation, radiofrequency, and combinations of some of these treatments.

Direction for future research: Concerns about the safety of food supply, along with concerns about the impact of agricultural chemicals on the environment, are increasing the interest for the development of non-chemical quarantine treatments, especially to meet export requirements. The challenge for future research is to develop non-chemical quarantine treatments and systems that do not harm the consumer or the environment, which are relatively low cost, and which can be applied in either permanent installations (such as rooms) or aboard sea transport ships. Quarantine can be made with individual treatments, but most probably would have to be developed as combined treatments in order to function effectively.