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MAINTAINING MARKET QUALITY IN QUARANTINE TREATMENTS: ISSUES AND APPROACHES.

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Summary

Heat and cold treatments are used for Insect disinfestation of fruit. These quarantine treatments are generally developed through a series of empirical experiments based on insect mortality coupled with parallel experiments on host fruit quality. Existing approved heat/cold quarantine treatments have occasionally produced fruit of poor quality. Current strategies for reducing phytotoxicity include development of nonempirical approaches to quarantine treatments and/or increasing the fruits tolerance to heat or cold. Nonempirical approaches could benefit from thermal process evaluation methods used in food processing. This process integrates the lethal effects of time-temperature relationships to ensure both adequacy of the heat process and to minimize over- processing to preserve product quality. One method for increasing the fruits tolerance to heat/cold include heat shocking or preconditioning the fruit prior to heat or cold storage. Our results indicate that prior heating of the fruit increases the amount of ACC oxidase which increases the residual amount of enzyme during and after heat treatments.