RESPONSES OF FRUIT TO HIGH TEMPERATURE DISINFESTATION TREATMENTS

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With the anticipated loss of methyl bromide for use as a fumigant and the worldwide trend away from chemical usage, there is an urgent need to develop alternative non-chemical disinfestation treatments for horticultural produce. Such treatments must control the quarantine pest of concern without detrimentally affecting the quality of the commodity.

Postharvest high temperature treatments have been developed for the disinfestation of certain tropical crops. For example, hot dry air treatments are currently being used commercially with papaya in the Cook Islands and Hawaii, and vapour heat treatments with tropical crops in South East Asia, for the postharvest control of fruit fly.

We have examined the response of a number of horticultural crops including apples, stonefruit, avocados, persimmons, kiwifruit and papaya to high temperature treatments. Fruit response varies depending on the crop concerned, the temperature and duration of treatment as well as mode of application of heat, eg. hot air vs hot water. Heat damage typically is manifested as browning of the surface of the fruit, uneven ripening and breakdown of fruit flesh. With a number of crops, eg. nectarines, avocado and papaya, certain heat treatments were found to increase susceptibility to postharvest decay. Some beneficial effects of heat treatment were also observed eg. reduction in susceptibility to chilling injury in avocado and persimmons.

The response of certain crops to heat treatments which show potential as disinfestation treatments and the effect of pretreatments on this response will be discussed.