Title Carbon dioxide treatment for postharvest insect control in chestnut

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Abstract

Chestnuts are routinely fumigated with methyl bromide for insect control prior to storage or shipment. Methyl bromide may be eliminated and banned in the near future according to the Montreal protocol. This study was conducted to determine the carbon dioxide concentration required for postharvest insect control in chestnuts as a replacement methyl bromide fumigation. Harvested chestnuts were submitted to 10-100% carbon dioxide for 1-28 days, and then the insect larva population was determined during storage. At higher concentrations and longer duration of exposure to CO_2 the population of larva hatching from eggs was reduced. A reduction of 80% in larva emergence was observed during storage by 100% CO_2 treatment for 7 days. In addition, short-term carbon dioxide treatment before storage resulted in an improvement of chestnut quality during storage. Softening, starch degradation, and sprouting during storage decreased by CO_2 treatments.