Is internal quality of chestnuts influenced by harvest methods and physical stresses?

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Abstract

For established and emerging chestnut (*Castanea* spp.) regions, understanding and minimizing the impact of mechanized harvesting on commodity quality is critical. Concerns of physical damage to *Castanea* spp. nuts, leading to internal disorders during mechanical harvesting, prompted a study to evaluate such effects. Chestnuts were subjected to three harvest methods including a commercial harvester, a research prototype harvester, and hand harvesting. In a more structured test, chestnuts were physically stressed under three controlled compression forces. Samples were held under optimal postharvest temperatures for 130 days. No significant differences in quality within chestnuts were found between mechanical harvesting methods and hand harvesting. This indicates that mechanical harvesting, under the ranges of this study, did not induce internal quality degradation. As expected, some significant ($P<0.05$) decrease in chestnut internal quality was observed with the increase of controlled compression forces. This is a positive finding for the industry; however, it should be noted that the study was conducted under optimum growing and harvesting conditions. An orchard with higher levels of microbial inocula and/or poorer postharvest care and handling could potentially yield significant differences among harvesting methods.