

Title Mechanical grape harvesting: Investigation of the transmission of vibrations
Author F. Pezzi and C. Caprara
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Abstract

The effects of harvester beater frequency on crop yield and quality and the interactions between machine and plants were evaluated. The frequency of the shaker (five settings ranging from 370 to 450 beats min^{-1}) was varied during an experiment conducted on a free spur of a pruned cordon-trained Lambrusco variety vine. The stresses transmitted by the machine to the plant were measured using accelerometers placed on both the supporting wires and the vine shoots. The yield and condition of the harvested grapes, the production losses and defoliation of the plants were recorded. The results supply important information on the regulation of the beater frequency for optimising yields and quality levels of the harvested grapes: the variation of frequency modifies not only the number but also the intensity of the vibrations and has a significant effect on yield losses, with contrasting trends between the visible and concealed losses.