

Title            Modern machines for walnut harvesting  
Authors        D. Monarca, M. Cecchini, D. Antonelli  
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Abstract:

In the last 20 years, the development of shell fruit cultivation in Italy has been related to the introduction of harvesting machines. These harvesters were introduced for hazelnut and chestnut harvesting (Monarca et al., 1996; Monarca et al., 2004) but their performance has been useful also for walnut orchards. The more recent innovations have concerned not only technical and economic performance (such as a reduction of operating time and costs) but also with the operator's safety, the quality of the work-environment, and ergonomic aspects (dust, noise, posture). After a description of the main technical aspects (with particular reference to the self-propelled harvesters), the authors discuss the results of experimental tests carried out in the last few years. The tests show harvesting performances for the different types of harvesters (pulled pick-up harvesters and trailer, self-propelled vacuum harvesters with trailer), which can exceed values of 4 t/h for self-propelled and 7 t/h for the pulled unit. The variability depends on factors like soil conditions, row length, orchard production and also on the organization of the harvesting yard. Tests show how the maximum efficiency of vacuum harvesters is reached on levelled and natural grass covered soils, prepared with accurate shredding.