

Title Harvesting vineyard pruning residues for energy use
Author Raffaele Spinelli, Natascia Magagnotti and Carla Nati
Citation Biosystems Engineering, Volume 105, Issue 3, March 2010, Pages 316-322
Keywords harvesting; vineyard

Abstract

Comparative tests of 4 systems for harvesting vineyard pruning residues were carried out using 1) a square baler; 2) a round baler; 3) a comminuter (or shredder) with drop-down re-usable containers (big bags); 4) a comminuter with built-in dumping bin. All machines were light enough for towing or carrying behind compact vineyard tractors. The machines were tested in Central Italy, on 10 ha of hill vineyard, with slope gradients ranging from 20 to 35%. The tests included forwarding the processed residue to a central storage place 3 km away. Harvesting–processing productivity ranged from 1.1 to 1.7 t per scheduled machine hour (SMH), including all delays. Calculated harvesting–processing costs varied between 19.7 and 32.3 € t⁻¹, but increased from 53.0 and 105.2 € t⁻¹ when forwarding the residues to a central collection point was included. The additional cost of residue management could amount to about 25 € t⁻¹ (50 € ha⁻¹ for 2 t ha⁻¹). The commercial viability of recovering vineyard pruning residue also depends on the eventual redistribution of the savings accrued on residue management. The studied systems offered different products: systems 1 and 2 produced bales, which are easier to store, but are not suited for the feeding of automated furnaces, unless they are further processed into chips. However, systems 3 and 4 produced chips, which are more difficult to store but can be fed to automated furnaces without any further processing.