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A harvesting system for agricultural woody crops at plantation removal

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The growing demand for biomass fuel is pushing the research for new sources of raw material. In South European countries the potential high potential of unused agricultural residues (from pruning and removal operations) is attracting much attention. Nevertheless this resource is scattered over the landscape, and is composed by a number of small sized fields, with relatively low yield of biomass constituted by small sized and unevenly shaped orchard trees. Thus the production of this biomass poses specific challenges, that must be carefully addressed if a cost efficient harvesting system is expected.

An Italian manufacturer developed a tailor made system composed by a simple but effective guillotine feller and a trailer mounted drum chipper, both propelled by farm tractors. The chipper set up features a light crane, a very low feeding table and a high tilting 10 m³ bin, enabling the machine to work alone with a single operator which feeds the trees while advancing. Alternatively, particularly under hail nets, the chipper can be fed by a light excavator. The chipping productivity in plantation removal operations ranged from an average of 10 t/hour in self feeding configuration to a maximum of 21 t/hour with the excavator's support, while felling productivity ranged between 20 to 37 t/effective hour. Overall the cost of harvesting, comminuting and transport is covered by the biomass value, enabling the contractors to provide a free service to farmers. The system could be deployed also for harvesting other geometric plantations, such as SRC.