



Abstract

# GIS-AHP Approach to Select the Most Suitable Extraction System in Mediterranean Oak Coppices under Environmental Constraints <sup>†</sup>

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**Abstract:** The selection of the most suitable alternative for harvesting operations is a challenging activity which is manageable via precision forest harvesting. In this study, an approach based on a combination of GIS (Geographic Information System) and AHP (Analytic Hierarchy Process), which rely on geospatial data and opinions of forest engineers with a good expertise on this topic, was applied in the Natural Reserve of Lamone (Latium, Italy) to select the most suitable extraction system in the oak coppice forests of the study area. The developed approach allowed for the selection among forwarder, forestry-fitted farm tractors equipped with winch and all-terrain cable yarder. The obtained results suggested that forwarder and all-terrain cable yarder were the most suitable extraction systems. The former can be applied to the major part of the study area while the application of winch was limited to forest parcel with high forest road density. The latter can be applied as the most suitable solution only in areas with low soil-bearing capacity and on steep terrain.

**Keywords:** GIS; MCDA; AHP; forwarding; winching; cable yarder



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