

Proceedings

GIS-AHP Approach to Select the Most Suitable Extraction System in Mediterranean Oak Coppices Under Environmental Constraints [†]

Damiano Tocci ^{1,*}, Francesco Latterini ², Rachele Venanzi ¹, Pierluca Gaglioppa ³ and Rodolfo Picchio ¹

Citation: Tocci, D.; Latterini, F.; Venanzi, R.; Gaglioppa, P.; Picchio, R. GIS-AHP Approach to Select the Most Suitable Extraction System in Mediterranean Oak Coppices Under Environmental Constraints. *Environ. Sci. Proc.*, **2022**, *4*, x. <https://doi.org/10.3390/xxxxx>.

Academic Editor: Angela Lo Monaco

Published: date

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Copyright: © 2022 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

¹ Department of Agricultural and Forest Sciences, Tuscia University, 01100 Viterbo, Italy; venanzi@unitus.it (R.V.); r.picchio@unitus.it (R.P.)

² Centro per la Ricerca in Agricoltura e l'Analisi dell'Economia Agraria; francesco.latterini@crea.gov.it

³ Lazio Region; pgaglioppa@regione.lazio.it

* Correspondence: tocci@unitus.it

† Presented at the 3rd International Electronic Conference on *Forests* — Exploring New Discoveries and New Directions in Forests, 15 to 31 October 2022. Available online: <https://iecf2022.sciforum.net>.

Abstract: The selection of the most suitable alternative for harvesting operations is a challenging activities 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), relying on geospatial data and opinion 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 tractor 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 on the major part of the study area, i.e. it was limited to forest area 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