

Optimizing cork oak forest management scheduling in the Western Mediterranean Basin

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Quantitative techniques for natural resources management planning have been extensively used both at private and public forest planning levels. Nevertheless, most applications concentrate on modeling of systems involving timber harvesting. In the Western Mediterranean Basin cork management planning is somewhat different from traditional timber management planning. The first cork harvest typically occurs when the tree is over twenty years of age and afterwards cork is usually harvested every nine years over the whole tree life cycle. Cork oak (*Quercus suber* L.) forestry thus adds complexity to the traditional forest management problem focusing on timber. In this presentation we present recent research aiming at the optimisation of cork oak forest management planning. Specifically, it proposes an hierarchical planning approach. Firstly, a spatial classification is proposed to design management units. Secondly, an optimization technique is proposed to address optimal cork harvesting subject to strategic even flow objectives. Results from an application to a case-study in the Charneca Pliocénica of Ribatejo in Southern Portugal are presented. Model solving reported effective spatial classification of cork oak management, achievement of cork even flow objectives and a substantial increase in net present value when compared to traditional approaches to cork oak forest management planning. The adequate use of quantitative techniques for management planning may contribute to the enhancement of the decision analysis process in Mediterranean forests in spite of data acquisition and production functions being critical elements for the process of model building in this forest ecosystems.

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