



Production and trade analysis in the Iberian cork sector: Economic characterization of a forest industry



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ABSTRACT

Cork oak forest grows endemically in the coastal regions of the western Mediterranean basin, particularly in the Iberian Peninsula. The cork agro-forestry systems play a key role in ecological processes, and the outer bark, or cork, can be extracted sustainably without damaging the tree or affecting biodiversity. Because of the properties of the cork, an important forestry and industrial structure has been developed around its most valuable goods. This paper describes the current global trade patterns in the Iberian Peninsula, where Portugal and Spain are world leaders. Although these countries bring most of their cork trade flows together with the rest of the world, there are clear differences between these sectors. The aim of this study was to identify these differences and to characterize each analysed sector from an economic perspective. The primary difference between the sectors lies in the characteristics of their supply chain and their capacity to generate wealth from raw cork. Portugal primarily produces and processes raw cork into products with high added value. Spain bases its cork sector on raw material and half-manufactured cork, and it is not able to use the full potential that cork provides. Catalonia is an exception because it is the global leader in the champagne stopper market. To encourage the development of the entire cork sector, every link in the supply chain should be strengthened through the establishment of companies and the generation of employment, and therefore the development of rural areas. Moreover, this industry must establish its own development strategies for the future, thereby increasing its investment in R&D and innovation in relation to the opportunities identified as follows: the potential for diversification beyond the wine market, the improvement potential for forest management and the enhancement of sustainability and eco-efficiency in every link of the cork supply chain.

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1. Introduction

Cork oak (*Quercus suber*) forests are one of the best examples of balanced conservation and development in the world. They play a key role in ecological processes such as water retention, soil conservation, and carbon storage (Rives et al., 2013b). The cork oak tree is a long-lived species (250–350 years) with an outer bark, or cork, which is characterized by its elasticity, impermeability and good thermal insulation (Pereira, 2007). Cork extraction is a sustainable process because it does not damage the tree, and following extraction, new bark regrows. This process occurs every

9–14 years, depending on the area, until the tree is approximately 200 years old (Pereira and Tomé, 2004). The cork oak forests are distributed along the coastal regions of the western Mediterranean basin, including Algeria, France, Italy, Morocco, Portugal, Spain, Tunisia, the islands of Corsica, Sardinia and Sicily (Fig. 1). The most extensive forests are concentrated in the Iberian Peninsula, which is located in southern Europe. Portugal and Spain make up 34% and 27% of the world's cork oak forests, respectively (Table 1).

Cork oak represents a good example of an agroforestry system, i.e., an intensive land management system in which trees and/or shrubs are deliberately combined with crops and/or livestock on the same land. The purpose of an agroforestry system is to optimize the benefits of biological interactions (Garrett and Buck, 1997). Cork production is the most important source of revenue in cork oak agroforestry (Borges et al., 1997), and it is considered the key element for preserving these systems (Campos et al., 2008b). The

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Fig. 1. Distribution map of cork oak (*Quercus suber*). EUFORGEN, 2009. www.euforgen.org.

Iberian Peninsula has the highest rate of cork extraction worldwide, at more than 80% (Table 1). In The Magreb (Morocco, Algeria and Tunisia), there is a notable area of cork oak forest with great potential for growth. Iberian cork oak forests are currently under-exploited because in both Portugal and Spain, approximately 90% of the cork oak forests are privately owned. This private ownership can lead to a near total lack of natural and artificial regeneration of cork oak because of the high investment needed for very long-term benefits (Zapata, 2002). This problem has been partly resolved by public subsidies, which, as discussed below, promote forestry and the economic development of cork regions.

Increasing the level of exploitation is crucial for appropriate forest management. On the one hand, control and enhance the natural regeneration of cork. That is, supporting the complex processes that occur from the time a seed is produced to the time its offspring reaches maturity. On the other hand, when managing natural regeneration is not sufficient, it is necessary to introduce artificial regeneration through the application of forestry activities (Aronson et al., 2009). Artificial regeneration is relatively recent, but it has greatly increased as a consequence of the afforestation programmes in the Common Agriculture Policy (EU 2080/92) (Pereira and Tomé, 2004). The primary forestry activities are the manual clearing of bushes, pruning, plant protection treatments and removing rocks. The ultimate objective of these activities is to create optimal conditions for performing the extraction and transport

of cork, in addition to ensuring the good health of cork, which partly determines the best or worst qualities of the cork harvest (Campos et al., 2008a). Moreover, these forestry activities can be beneficial for the sustainable development of the forestry industry and the rational use of raw materials and other potential forestry products. Some of these potential products are associated with both traditional agrosilvopastoral practices and the gathering of a number of non-timber products (e.g., mushrooms, berries, aromatic plants and hunting) (Bojnec and Fertő, 2014; Campos et al., 2008b; Zapata, 2002). Within this context, public institutions have increased concerns about natural areas and rural employment, and they have responded by granting subsidies for cork oak reforestation and its corresponding increase in cork production (Campos et al., 2008a; EU, 1996, 2006).

The Iberian Peninsula has had concentrated cork production, industry and commerce since the mid-20th century because of its the location in the major wine-growing regions of the world, the presence of abundant raw cork and a cheap workforce (OIV, 2013; Parejo, 2010; Zapata et al., 2009; Parejo Moruno, 2004; Zapata, 2002). This combination of factors has resulted in a concentration of the global cork business in both Portugal and Spain, but in an unequal distribution. Portugal has experienced an important evolution; it has become the world's primary cork industry power and replaced Spain from the preminent position that it had occupied since the 18th century. In recent years, the cork sector

Table 1
Worldwide cork oak area and raw cork production by country (APCOR, 2014).

Country	Cork oak area (ha)	Cork oak area (%)	Raw cork extracted yearly (t)	Raw cork extracted yearly (%)
Portugal	715,922	34	100,000	49.6
Spain	574,248	27	61,504	30.5
Morocco	383,120	18	11,686	5.8
Algeria	230,000	11	9,915	4.9
Tunisia	85,771	4	6,962	3.5
France	65,228	3	5,200	2.6
Italy	64,800	3	6,161	3.1
Worldwide	2,119,089	100	201,428	100

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