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Cork Oak (*Quercus suber*): The Roles of Its Bark

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Cork oak (*Quercus suber*) is an evergreen tree native to the western Mediterranean Basin countries of Portugal, Spain, Morocco, Algeria, Italy, Tunisia, and France. The main difference between this species and its relatives is its unique outer bark. Each year, cork oak produces a layer of suberized phellem cells that are not shed but rather accumulate in the form of annual rings. This external layer of cork can reach a thickness of more than 15 cm and constitutes the tree's main protection from fire and mechanical damage.

In the Mediterranean Basin, cork has been used by humans at least since ancient times (Egyptians, Greeks, Romans) for sealing jars, for roofing, for making beehives, and in many other ways. A French Benedictine monk (Dom Pierre Pérignon, ca. 1638–1715), is considered responsible for the widespread use of cork stoppers to preserve wine in bottles ([Figure 16](#)). Since the 1600s, cork use has grown with the wine industry. Currently, cork is also still used for insulation, decoration, and fishing buoys.

Cork is harvested manually at 9-12 year intervals (when it is about 3-cm thick) by skilled local people. Cork stripping has to be done with care and when the phellogen is active (i.e., in late spring and early summer). If performed at an inappropriate time, stripping may kill parts of the stem or even the entire tree, because the inner bark is removed down to the vascular cambium.

Currently, it is very difficult to understand the success of the wine industry without due consideration of cork. But, perhaps more importantly, the cork industry is the main driver of cork oak woodland conservation because cork production depends on sustainable woodland management ([Figure 17](#)).

The principal ecological role of the corky bark is to protect trees from wildfire damage; the strong insulating characteristics of cork shields inner stem tissues from heat. Cork oak evolved in fire-prone Mediterranean ecosystems, and its thick outer bark confers

on this species a distinct advantage over its competitors. Thanks to their thick insulating bark, cork oaks also resprout vigorously from stem buds, and thus even when the crown is damaged, it recovers quickly after fires (Pausas 1997).

The capacity to resprout from buds on the upper trunk after fires is a rare feature among tree species, shared with some Eucalyptus species and few others. Finally, although other tree species living in fire-prone ecosystems have evolved corky barks, none have outer bark as thick or as valuable as cork oak.

Reference

Pausas JG (1997) Resprouting of *Quercus suber* in NE Spain after fire. *Journal of Vegetation Science* 8: 703-706

The photograph at top of the page shows a cork oak that has had the bark on its lower trunk removed. Note that the bark higher up is still intact. Photo by Ian Francis (Australia).

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