



Polibotánica  
ISSN: 1405-2768  
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Departamento de Botánica  
México

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Durabilidad natural de la madera de cinco especies de *Quercus* del estado de Puebla  
Polibotánica, núm. 12, diciembre, 2001, pp. 85-100  
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Distrito Federal, México

Available in: <http://www.redalyc.org/articulo.oa?id=62101205>

### Abstract

Graveyard tests were made on both heartwood and sapwood stakes of five oak species from Puebla State, Mexico, to assess their durability and determine service life. The studied species were *Quercus affinis*, *Q. crassifolia*, *Q. glabrescens*, *Q. laurina* and *Q. mexicana*. The criteria for assessing the attack on the stakes was based on the ASTM D 1758 standard. Evaluation of the stakes was carried out every six months for a period of 66 months. Average values indicated that natural durability of the heartwood was from 20% a 60% greater to that of the sapwood, so the main analysis of data was focused on sapwood performance and its average values were used to develop a mathematical model, as well as to determine life service of each specie. Several indicators were derived from the model and allowed to analyse the performance of decay resistance on sapwood. The failure of sapwood stakes was only due to fungi. The most resistant sapwood of the species was *Quercus glabrescens*, next in order of decreasing resistance were *Q. affinis*, *Q. mexicana*, *Q. crassifolia* and *Q. laurina*. However, only *Q. laurina* was classified as moderately durable and the remaining as durable. When dealing with a mixture of species, it was considered that it is possible to use natural sapwood timber in ground contact up to 21 months. At this time, the timber reaches a moderate decay grade and still allows to apply a preservative treatment in order to increase its service life.

### Keywords

Oak, natural durability,  
graveyard tests, Puebla

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