

The Collection of Oak Trees of Mexico and Central America in Iturraran Botanical Gardens

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Overview

Iturraran Botanical Gardens occupy 25 hectares of the northern area of Spain's Pagoeta Natural Park. They extend along the slopes of the Iturraran hill upon the former hay meadows belonging to the farmhouse of the same name, currently the Reception Centre of the Park. The minimum altitude is 130 m above sea level, and the maximum is 220 m. Within its bounds there are indigenous wooded copses of *Quercus robur* and other non-coniferous species.

Annual precipitation ranges from 140 to 160 cm/year. The maximum temperatures can reach 30° C on some days of summer and even during periods of southern winds on isolated days from October to March; the winter minimums fall to -3° C or -5° C, occasionally registering as low as -7° C. Frosty days are few and they do not last long. It may snow several days each year.

Soils are fairly shallow, with a calcareous substratum, but acidified by the abundant rainfall. In general, the pH is neutral due to their action.

Collections

The first plantations date back to late 1987. There are currently approximately 5,000 different taxa, the majority being trees and shrubs. There are around 3,000 species, including around 300 species from the genus *Quercus*; 100 of them are from Mexico and Central America.



Quercus costaricensis

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Oaks from Mexico and southern USA	Oaks from Mexico	Oaks from Mexico and Central America	Oaks from Central America and northern South America
<i>Quercus agrifolia</i>	<i>Quercus acherdophylla</i>	<i>Quercus acatenangensis</i>	<i>Quercus copeyensis</i> *(1)
<i>Quercus emoryi</i>	<i>Quercus acutifolia</i>	<i>Quercus candicans</i>	<i>Quercus costaricensis</i>
<i>Quercus gravesii</i>	<i>Quercus affinis</i>	<i>Quercus castanea</i>	<i>Quercus cubana</i>
<i>Quercus hypoleucoides</i>	<i>Quercus canbyi</i>	<i>Quercus cortesii</i>	<i>Quercus eugenifolia</i>
<i>Quercus viminea</i>	<i>Quercus coccolobifolia</i>	<i>Quercus crassifolia</i>	<i>Quercus humboldtii</i>
<i>Quercus ajoensis</i>	<i>Quercus conspersa</i>	<i>Quercus crispifolia</i>	<i>Quercus irazuensis</i> *(2)
<i>Quercus arizonica</i>	<i>Quercus crassipes</i>	<i>Quercus crispipilis</i>	<i>Quercus rapurahuensis</i>
<i>Quercus cornelius-mulleri</i>	<i>Quercus cupreata</i>	<i>Quercus elliptica</i>	<i>Quercus seemannii</i>
<i>Quercus dumosa</i>	<i>Quercus depressa</i>	<i>Quercus sapotifolia</i>	<i>Quercus strombocarpa</i> *(3)
<i>Quercus engelmannii</i>	<i>Quercus deserticola</i>	<i>Quercus skinneri</i>	<i>Quercus tristis</i> *(4)
<i>Quercus fusiformis</i>	<i>Quercus durifolia</i>	<i>Quercus corrugata</i>	
<i>Quercus gambelii</i>	<i>Quercus x dysophylla</i>	<i>Quercus insignis</i>	
<i>Quercus grisea</i>	<i>Quercus eduardi</i>	<i>Quercus lancifolia</i>	
<i>Quercus laceyi</i>	<i>Quercus germana</i>	<i>Quercus oleoides</i>	
<i>Quercus mohriana</i>	<i>Quercus glabrescens</i>	<i>Quercus oocarpa</i>	
<i>Quercus muehlenbergii</i>	<i>Quercus glaucescens</i>	<i>Quercus peduncularis</i>	
<i>Quercus oblongifolia</i>	<i>Quercus glaucoides</i>	<i>Quercus polymorpha</i>	
<i>Quercus pungens</i>	<i>Quercus greggii</i>		
<i>Quercus sinuata</i>	<i>Quercus hintonii</i>		
<i>Quercus turbinella</i>	<i>Quercus hintoniorum</i>		
<i>Quercus x undulata</i>	<i>Quercus hirtifolia</i>		
<i>Quercus vaseyana</i>	<i>Quercus laeta</i>		
<i>Quercus chrysolepis</i>	<i>Quercus laurina</i>		
<i>Quercus tomentella</i>	<i>Quercus leiophylla</i>		
	<i>Quercus liebmannii</i>		
	<i>Quercus macvaughii</i>		
	<i>Quercus magnoliifolia</i>		
	<i>Quercus martinezii</i>		
	<i>Quercus microphylla</i>		
	<i>Quercus mexicana</i>		
	<i>Quercus planipocula</i>		
	<i>Quercus obtusata</i>		
	<i>Quercus potosina</i>		
	<i>Quercus pinnativenulosa</i>		
	<i>Quercus prainiana</i>		
	<i>Quercus rysophylla</i>		
	<i>Quercus pringlei</i>		
	<i>Quercus salicifolia</i>		
	<i>Quercus resinosa</i>		
	<i>Quercus sartorii</i>		
	<i>Quercus scytophylla</i>		
	<i>Quercus sideroxylla</i>		
	<i>Quercus tarahumara</i>		
	<i>Quercus subspathulata</i>		
	<i>Quercus urbanii</i>		
	<i>Quercus xalapensis</i>		

- * (1) *Quercus copeyensis* is sometimes regarded as a synonym of *Q. bumelioides*, which is distributed from southern Mexico to Panama.
- * (2) *Quercus irazuensis* can be considered as a form of *Q. costaricensis*, from which it is differentiated by its non-rounded apex, its less rigid leaf blade and its less dense hairs.
- * (3) *Quercus strombocarpa* is considered to be a synonym of *Q. insignis*, but the example in Iturraran is differentiated from this one by its very conical acorn, its origin, southern Costa Rica, its lesser resistance to cold and for being very susceptible to *Oidium*.
- * (4) *Quercus tristis*, from Guatemala, is considered to be a synonym of *Q. castanea*, but the leaves are glabrescent even when young and those of the latter are tomentose.

Notable species

Some of the species of oaks in Iturraran are quite rare in cultivation. Outstanding among these are:

- Quercus coccolobifolia* Trel., native species of western Mexico, Western Sierra Madre: In Iturraran there is one young plant, from Bosque La Primavera (Forest of the Spring) in Jalisco.
- Quercus copeyensis* C.H. Mull., native of Costa Rica and Panama: two young plants from Cordillera Central in Costa Rica.
- Quercus corrugata* Hook., from central Mexico as far as Panama: There are various examples in Iturraran: two from Villa Mills in Costa Rica and four from Cuetzalan, Puebla, Mexico.
- Quercus costaricensis* Liebm., from Costa and Panama: two examples from the slopes of Volcán Irazú, in Costa Rica, the largest reaching 8 m tall; another two examples planted later come from Villa Mills, also in Costa Rica.
- Quercus cubana* A. Rich., from the island of Cuba: one young example coming from an exchange with Atlántico Botanical Gardens, in Gijón, Spain.
- Quercus elliptica* Née, from southern Mexico and Guatemala: one example from southern Oaxaca, near Cerro La Mojonera.
- Quercus excelsa* Liebm., from central and eastern Mexico: two examples from Xalapa, Veracruz, Mexico, the largest reaching 3 m tall.
- Quercus glaucooides* M. Martens & Galeotti, from central and southern Mexico: two young examples from the area surrounding Taxco, Guerrero, Mexico.
- Quercus gulielmi-treleasei* C.H. Mull., native of Costa Rica: one example reaching 7 m tall, from Cerro Chirripó, in Costa Rica.
- Quercus hintonii* E.F. Warb., native of the State of Mexico, in critical danger of extinction: one young example, from Tejupilco.
- Quercus humboldtii* Bonpl., from southern Panama and Colombia: one example, from the Bogotá Botanical Gardens, in Colombia.
- Quercus insignis* M. Martens & Galeotti, from southern Mexico to Panama: five examples from different collections carried out in Huatusco, Veracruz, Mexico. The largest reaches 8 m tall.

Quercus macvaughii Spellenb., from north-western Mexico: one young example, from Sierra Tarahumara, in Chihuahua, Mexico.

Quercus magnoliifolia Née, from western Mexico: two young examples, from Ixtlán de Juarez, in Oaxaca, Mexico.

Quercus martinezii C.H. Mull., from western Mexico: one young example, from Cerro Huixteco, Taxco, Guerrero, Mexico.

Quercus oleoides var *australis* Trel., from Costa Rica: one example 2 m tall, from the area around Liberia, Costa Rica, at an altitude of 550 m.

Quercus rapurahuensis Pitter ex Trel., from Costa Rica and Panama: seven



Quercus insignis

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- examples, the largest 4 m tall, from San Gerardo de Dota, in Costa Rica.
- Quercus seemanni* Liebm., from Costa Rica and Panama: two examples, the tallest 4 m, from San Gerardo de Dota, Costa Rica.
- Quercus skinneri* Benth., from southern Mexico as far as Honduras: two examples, the largest 3 m tall, from the shores of Lake Atitlán, in Guatemala.
- Quercus tarahumara* Spellenb. et al., from north-western Mexico: one plant, from the Sierra Tarahumara, in Sonora, Mexico.
- Quercus urbanii* Trel., from northern, eastern and central Mexico: one young example from Taxco, Guerrero, Mexico.
- Quercus xalapensis* Bonpl., from southern Mexico to Guatemala: three examples from Xalapa, Veracruz, Mexico, the largest reaching 2 m tall.

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Quercus gulielmitreleae

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Quercus rapurahuensis

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Quercus oleoides

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