



XIV OPTIMA Meeting

September, 9-15 2013

Palermo

## Abstracts



Fondazione  
Internazionale  
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Mediterraneo





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Lectures  
Communications  
Posters



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Orto Botanico, Palermo 9-15 September 2013

**OPTIMA (Organization for the Phyto-Taxonomic Investigation of the Mediterranean Area)**  
**XIV OPTIMA MEETING**

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**Abstracts**

*Lectures, Communications, Posters*

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## Genetic diversity in Sicilian populations of *Quercus ilex* (Fagaceae)

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*Quercus ilex* L. constitutes the floristic element that best summarizes the characteristics of the climate and the Mediterranean landscape. The distribution range of this oak displays bioclimatic features along with biogeographical ones, as on the one hand identifies the space pertaining to the Mediterranean evergreen forest and on the other hand it outlines quite well the Mediterranean phytogeographic region.

This species is well known for a relevant phenotypic variability, in part already treated by taxonomists at the infraspecific level. In fact, besides of the nominal subspecies and some varieties, the subsp. *ballota* (Desf.) Samp.[= *Q. rotundifolia* Lam., *Q. ilex* subsp. *rotundifolia* (Lam.) T. Morais] is widely accepted as a well distinct taxon, ranging all over the Iberian Peninsula and North-West Africa.

Recent studies on the genetic structure of the Italian populations of *Q. ilex*, demonstrated their high diversity, which turned out to be particularly accentuated in the Sicilian metapopulation (Fineschi & al. 2005. Ann. For. Sci. 62:79-84).

On the basis of the possible contacts between the populations of North Africa, in particular, with the Sicilian one, the morphological and ecological variability existing within the latter can be interpreted as the result of processes of hybridisation – probably followed by introgression processes – occurred among the populations of *Q. ilex* subsp. *ballota* and those of *Q. ilex* subsp. *ilex*. Another possible reason for such variability could be – instead of a simple contact – the past inclusion of the Sicilian Island into the distribution area of *Q. ilex* subsp. *ballota*, whose population could then be maintained on the highest part of some mountains, such as those of Madonie, where it survived up to the present day. This hypothesis would explain the rather unusual direct contact of the holm oak forests of Quacella with the beechwoods in the same area, as well as the high altitude reached (over 1750 m above sea level) by this population in the context of the distribution area of *Quercus ilex* s.l. So, the holm oak forests of Madonie heights should be regarded as a different population than *Q. ilex* subsp. *ilex*, and closer if not equal to *Q. ilex* subsp. *ballota*. Indeed, the morphological and ecological analysis conducted on the population of the Madonie mountains highlighted the divergent features from the nominal subspecies and closer characteristic to the subsp. *ballota*. Quite interestingly an ethnobiologic investigation drove to similar results, since the mountain populations of holm oak are traditionally distinct by charcoal producers as “ilici muscarinu”, juxtaposed to the normal holm-oak (simply named “ilici”) because of its harder and much durable wood.

In conclusion, this seems to be an interesting case study that induced the authors to start a biomolecular study with the purpose to better characterize the genomic features of such critical Sicilian population, in order to compare it with representative populations of the Italian Peninsula, North Africa and Spain. Preliminary results of this study already show that the individuals of the investigated mountain population share a common ancestry and, at the same time, they appear to be genetically distant from the rest of the Sicilian populations, including the ones in the rest of the Madonie area, as well as those from Pantelleria and from the island of Capri, adopted for comparison.