

# Agroecosystems and plant diversity: Olive groves understory, under different management practices in Greece: a case study on Lesvos island

Panitsa Maria & Kakampoura Basiliki

Laboratory of Botany, Division of Plant Biology, Department of Biology, University of Patras, Patras, Greece

## Introduction

Agroecosystems often dominate in Mediterranean area and their management strongly affects biodiversity. In Greece, about one third of the olive groves are organic – with environment friendly farming practices - while the rest includes conventional or abandoned olive groves. The management of agroecosystems strongly affects biodiversity. *Olea europaea* is a characteristic species of Mediterranean vegetation. Olive groves cover about 20% of the area in Greece. Only 8% of olive groves in Greece are organic, - cultivated using environment friendly farming practices- while the rest includes conventional or abandoned olive groves. Lately, the organic management of olive groves, seems to be preferred as a result of economic and ecological factors.

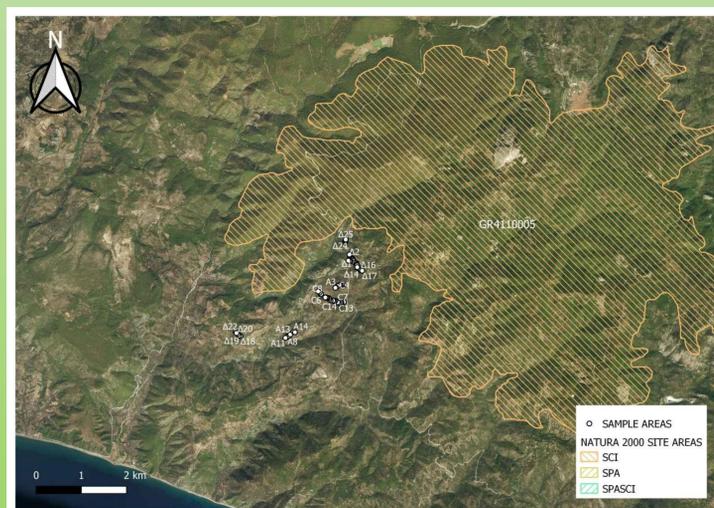
Lesvos, the third-largest island of Greece, is characterized by rich plant diversity (more than 1560 plant taxa). 41% of the fertile land of the island is covered by olive groves, which most of them are organized in terraces.

The current study aims to investigate plant species diversity of olive groves under different management practices such as organic, conventional and abandoned olive groves in the Southeastern part of the Lesvos island, which concludes the area of olive groves.

The hypothesis, is that the different management of olive groves affects the sustainability of the biodiversity.

## Material and Methods

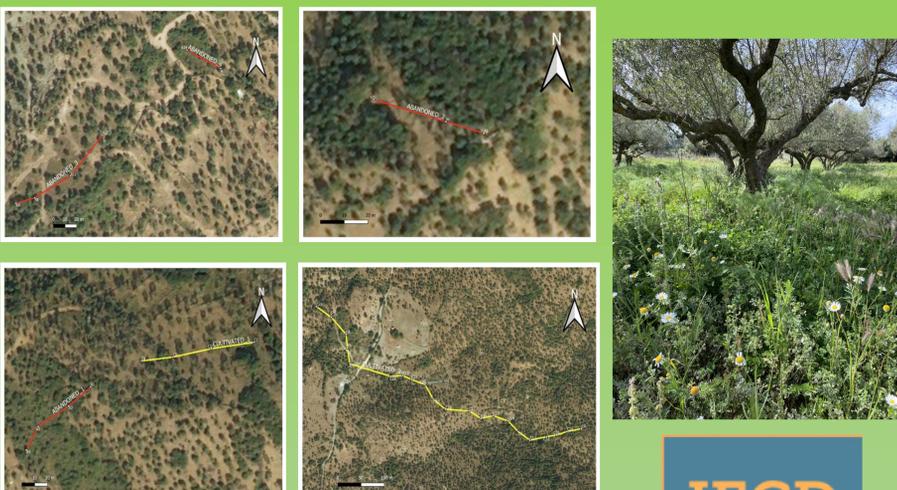
The sampling has been realized in 65 plots, which 25 of them on organic olive groves, 25 on conventional and the rest on abandoned olive groves, at the Southeastern part of the Lesvos, near the highest mountain of Lesvos island, mt. Olympus, and the SCI Natura 2000 Site GR4110005. Field surveys to sample the flora and vegetation at field scale were performed during April and May of 2020 and 2021. More than 240 plant taxa have been registered on the understory of the three types of olive groves.



Sampling area on Lesvos island. A: Plots on abandoned olive groves, C: Plots on conventional olive groves and Δ: Plots on organic olive groves.



Sampling area on Lesvos island. Plots on organic olive groves.



Sampling area on Lesvos island. Plots on conventional olive groves (yellow transect) and on abandoned olive groves (red transects).

## Results



Organic olive grove.

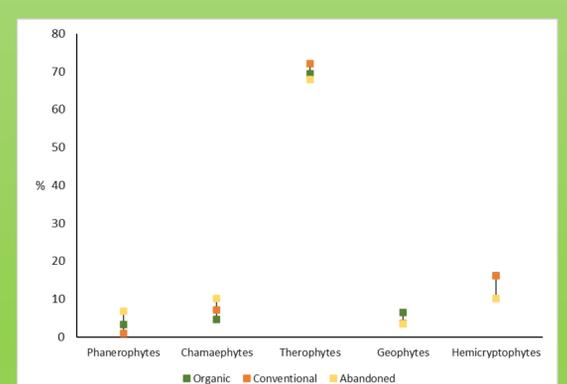
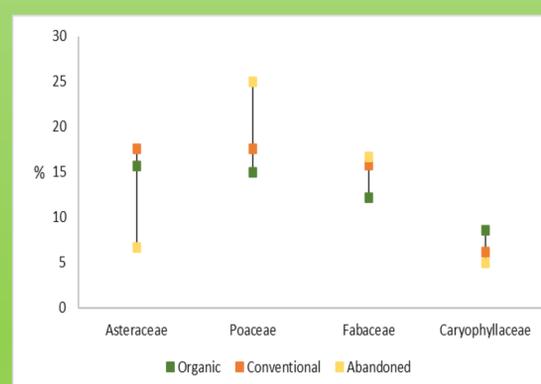
More than 240 plant taxa have been registered, belonging to 36 families of which the richest three are *Asteraceae*, *Poaceae* and *Fabaceae*. 57% of the taxa have been registered on organic olive groves, 46% on conventional and 25% on abandoned olive groves. The most common species were the therophytes *Anthemis chia*, *Trifolium campestre*, *Lagoecia cuminoides*, etc.



Abandoned olive groves



Conventional olive grove.



Proportions of the taxa registered on organic, conventional and abandoned olive groves, belonging to the richest of the families, Asteraceae, Poaceae, Fabaceae and Caryophyllaceae

Proportions of the different life-forms of the taxa registered on organic, conventional and abandoned olive groves

## Main Conclusions

The results showed that organic olive groves are characterized by a rich and diverse flora, mainly dominated by therophytes and especially of annual leguminous species and other insect-pollinated plants that are indicators of long-term but moderate human interference. Conventional olive groves have a poorer and rather common flora also dominated by therophytes. Abandoned olive groves present a rather poor but diverse flora, mainly dominated by hemicryptophytes and phanerophytes and to a lower proportion of annual plants, depending also on when they have been abandoned. In conclusion, human practices seem to be the major factor for the plant diversity in olive groves.

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