



# Olive trees intercropped with cereals and legumes

A new development for a  
traditional system

[www.agforward.eu](http://www.agforward.eu)

## Traditional land use system

Olive (*Olea europaea*) is the most widespread cultivated tree in Greece (Schultz et al. 1987). Olive trees alone, or in orchards, are found in all parts of the country that have a mild Mediterranean climate. The olive tree is considered to be one of the least demanding cultivated trees in terms of soil nutrients. For this reason, it is planted in poor, rocky areas with soils mostly derived from hard limestone. In traditional systems, practically all olive trees came from wild plants which were grafted. Edible olives and olive oil are the main products of olive trees, while secondary products include fodder for animals and firewood.



Olive trees intercropped with barley in spring  
Ref : Mantzanas 2016



Olive trees intercropped with a mixture of barley and common vetch Ref : Mantzanas 2015

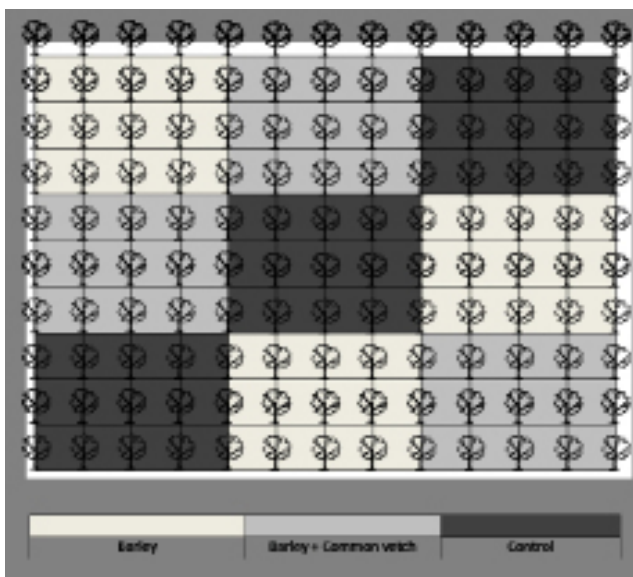
## Cropping among trees

A stakeholder group from Kassandreia, Chalkidiki, identified examples of interesting and best practices that involved the intercropping of olive trees and leguminous crops for animal feed and soil amelioration, and/or cereals for grain production (Pantera 2014).

Intercropping can help protect a farmer's income against financial losses due to variable weather conditions. Intercropping is not a new practice, and was widely practised before olive tree orchards were converted to monoculture systems. In order to progress with the initial idea for the olive tree system of Chalkidiki, it was decided to explore the key features of this kind of intercropping system.

## System establishment

A controlled experiment was established in the premises of the State Rural Prison in Kassandra Chalkidiki, in December of 2014. It comprised three treatments (olive trees + barley, olive trees + a mixture of barley and common vetch and, as a control, olive trees alone) in three replications in a latin square design. The mixture was harvested for hay and the barley for grain.



The latin square design of the Kassandra experimental area  
Ref : Mantzanas 2014

## Advantages

The intercropping of olive trees and leguminous crops for animal feed and soil amelioration or cereals for grain production could be a valuable addition to the system. It provides new products such as hay and grain for animals, and offers environmental benefits, such as increased biodiversity and soil conservation.

The three year trial demonstrated an impressive growth of olive trees, and higher production of olives to that previously attained.



Impressive growth of the mixture (common vetch + barley) during the spring of second year  
Ref: Mantzanas 2016

## Crop yield

The preliminary results for total biomass show that there was no significant difference between the total biomass averages of the samples taken close to the tree or far from the tree. This suggests that the accumulation of the biomass is unaffected by the position relative to the tree. The number of seeds was higher in the samples harvested near the tree, so the tree could have a positive effect on the formation of seeds. Total hay and seed production were higher in the second and third years of the experiment.

## Further information

Pantera A (2014). Initial Stakeholder Report – Intercropping of olive groves in Greece. TEI Stereas Elladas, Greece  
Schultz AM, Papanastasis VP, Katelman., Tsiouvaras C, Kandrelis S, Nastis A (1987). Agroforestry in Greece. Aristotle University of Thessaloniki, Thessaloniki, Greece

### Konstantinos MANTZANAS

konman@for.auth.gr

Aristotle University of Thessaloniki,  
Greece

[www.agforward.eu](http://www.agforward.eu)

November 2017

This leaflet is produced as part of the AGFORWARD project. Whilst the author has worked on the best information available, neither the author nor the EU shall in any event be liable for any loss, damage or injury incurred directly or indirectly in relation to the report.