

ECOMONTADO XXI - Agroecology applied to the design of a new cork-oak forest

Agroecology Keyline good practice helps regenerate cork-oak forests in southern Portugal.

EAFRD-funded projects

Location: Foros de Vale de Figueira, Portugal

Programming period: 2014-2020

Priority: P4 - Ecosystems management

Focus Area: Soil erosion & soil management

Measures: M16 - Cooperation

Funding:

Total budget:	333 107 (EUR)
EAFRD:	228 476 (EUR)
National/Regional:	25 386 (EUR)
Private/own:	79 245 (EUR)

Timeframe: 01/01/2018 - 31/12/2022

Project promoter: Sociedade Agrícola do Freixo do Meio, Lda.*

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Summary

A Montado is a typical Mediterranean agro-silvo-pastoral ecosystem of southern Portugal. Several factors, such as poor livestock management and soil movement due to climate change, have been negatively affecting the Montados, which have been losing their vitality and productivity. This results in nutritional loss and soil imbalance, the expansion of phytosanitary problems, the death of trees, and the reduction of tree cover. Sociedade Agrícola do Freixo do Meio, Lda., manages around 600 ha of Montado, around 120 ha of which was at risk of disappearance because of these interconnecting factors. An EIP Operational Group was set up to test a new 'Keyline technique' in the affected area to find a solution and restore the Montado.

* The project promoter/beneficiary is an EIP-AGRI Operational Group (https://eu-cap-network.ec.europa.eu/operational-groups_en)



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Project results

- New stands of shrubs and around 7 000 trees were successfully planted to restore 51 ha of the Montado.
- Six farmers/landowners intend to apply Keyline techniques on their farms.
- The project contributed to the recovery of a sustainable and traditional productive system. The restored landscape will have a positive impact on climate adaptation and resilience by increasing carbon sequestration and conservation and restoring and enhancing biodiversity.

Key lessons and recommendations

- The EIP Operational Group demonstrated that this innovative technique can make a significant contribution to the restoration of areas where soil is degraded and where a lack of vegetation makes it difficult to protect young trees from extreme summer temperatures.
- In-person site visit demonstrations turned out to be much more effective communication actions than printed brochures, online campaigns, or other channels.



Context

A Montado is an agro-silvo-pastoral ecosystem which is common in the south of Portugal, representing about a third of the total forest area of the mainland in 2010. They are associated with one of the main value chains of the Portuguese agri-food sector, namely the cork sector, alongside livestock production and other emerging sectors, such as rural tourism and the use of acorns for human consumption.

Sociedade Agrícola do Freixo do Meio, Lda., manages around 600 ha of Montado, of which around 120 ha have been affected by several practices that have led to their disappearance. Recovery of this agroforestry system was hampered by the degraded state of soil and the lack of vegetation cover to protect young trees from extreme summer temperatures. An EIP Operational Group was established to test the Keyline technique to install a new Montado in these degraded areas. The Keyline technique is based on agro-ecological practices that favour the installation of vegetation and trees by managing the distribution of water in the soil according to the natural topography of the landscape.



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Objectives

The aims of this project were to:

- Understand the best way to recover the Montado system where it was lost, using the Keyline technique.
- Test the Keyline technique in different situations, namely different types of soil and different topologies.

Activities

Project activities included:

- Defining the intervention area through the identification of testing plots and mapping their edaphic and ecological characteristics.
- Conducting a topographic land survey. This involved a study of the topography and levelling of the terrain.
- Conducting a survey of all existing structures in the area, such as ponds, buildings, trees, etc.
- Defining the study areas according to the Keyline technique, e.g. water accumulation and retention points, areas for forest use, and agricultural use.
- Implementing the project on the ground. This involved purchasing specific tools (Yeomans plough); creating 'K-Lines', meaning lines for water retention along the field, using the Yeomans plough according to the various experimental hypotheses; planting Mediterranean trees and shrubs (*Quercus suber*, *Q. ilex*, *Pinus pinea*) over 51 ha according to the defined experimental design.



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- Monitoring the intervention area and maintaining the K-Lines through periodical use of the Yeomans plough.
- Evaluating the social, environmental, and economic impacts of the applied methodology, then replicating the technique in other degraded areas, including existing Montados.
- Disseminating the results through the project's website, technical publications and demonstration actions (colloquiums, seminars and focus groups). The project organised a field day and exchange of experiences, open to all participants in Tertúlias do Montado. 36 people participated, including researchers and landowners who were external to the project.



The project partners of this EIP Operational Group were the Sociedade Agrícola do Freixo do Meio, Lda.; Associação dos Produtores Florestais do Concelho de Coruche e Limitrofes; Universidade de Évora - Instituto de Ciências Agrárias e Ambientais Mediterrânicas; and Herdade da Machoqueira do Grou, CRL.

Main results

- > A significant number of trees and shrubs survived and will act as a carbon sink in the coming years. Considering the very high mortality rate due to the arid conditions of the area, it is estimated that around 7 000 trees will survive.
- > Many farmers have contacted and visited Montado do Freixo do Meio to learn about and replicate these agroecological practices on their own farms. Six additional farmers/landowners intend to apply K-Line techniques on their farms.
- > The project dissemination actions reached a wide audience, including researchers, farmers, consultants, students of agronomy, etc.
- > The project contributed to the recovery of a sustainable and traditional productive system. The restored landscape will have a positive impact on climate adaptation and resilience by increasing carbon sequestration and conservation, and restoring and enhancing biodiversity.

Key lessons and recommendations

- > The Keyline technique and associated agroecological practices establish new tree stands in open areas, thus improving shading and water distribution in the soil.
- > After the first years of tree growth, the annual ploughing to restore the K-lines can be stopped, as its impact on the roots outweighs the benefits in soil aeration and water management. However, the change already caused by the implementation of the Keyline has positive long-term effects.
- > The dissemination activities showed that one in-person site visit turned out to be a much more effective communication action than printed brochures, online campaigns, or other channels.



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Quote

“We’re building biodiversity, the only system that creates tools for approaching the future. It’s the immediate solution for building sustainability and the best instrument for dealing with uncertainty, particularly with regard to climate change.”

Alfredo Sendim, manager of Freixo do Meio Montado, project proponento

Additional information:

www.ecomontadoxxi.uevora.pt/

<https://freixodomeio.pt/>



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