

How viticulture is implementing IPM principles to reduce the use of pesticides

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■ Douro Demarcated Region (Port wine region) – North of Portugal



43 600 ha of vineyards

36 000 ha of steeply sloping vineyards!

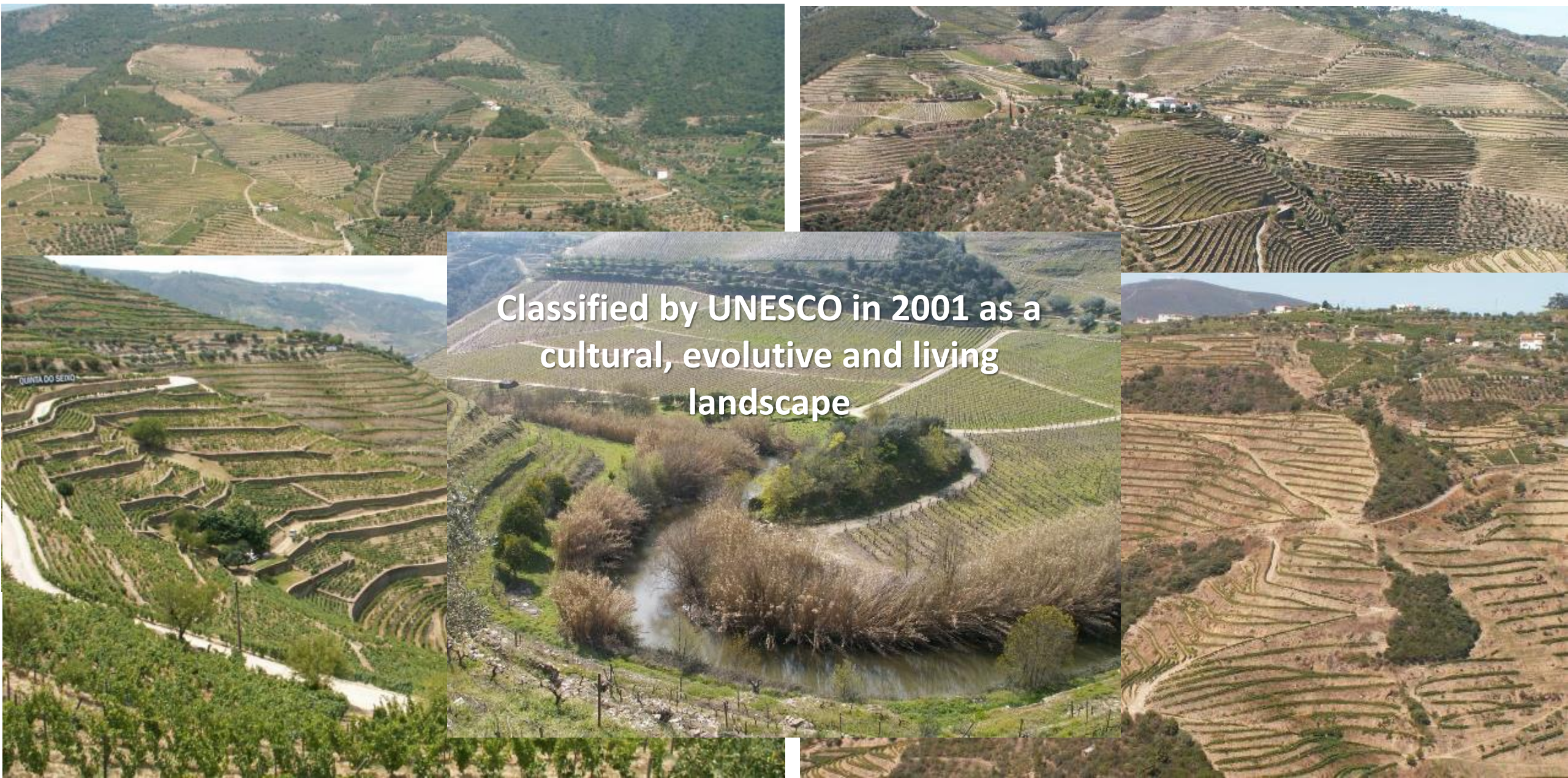


Douro DOC

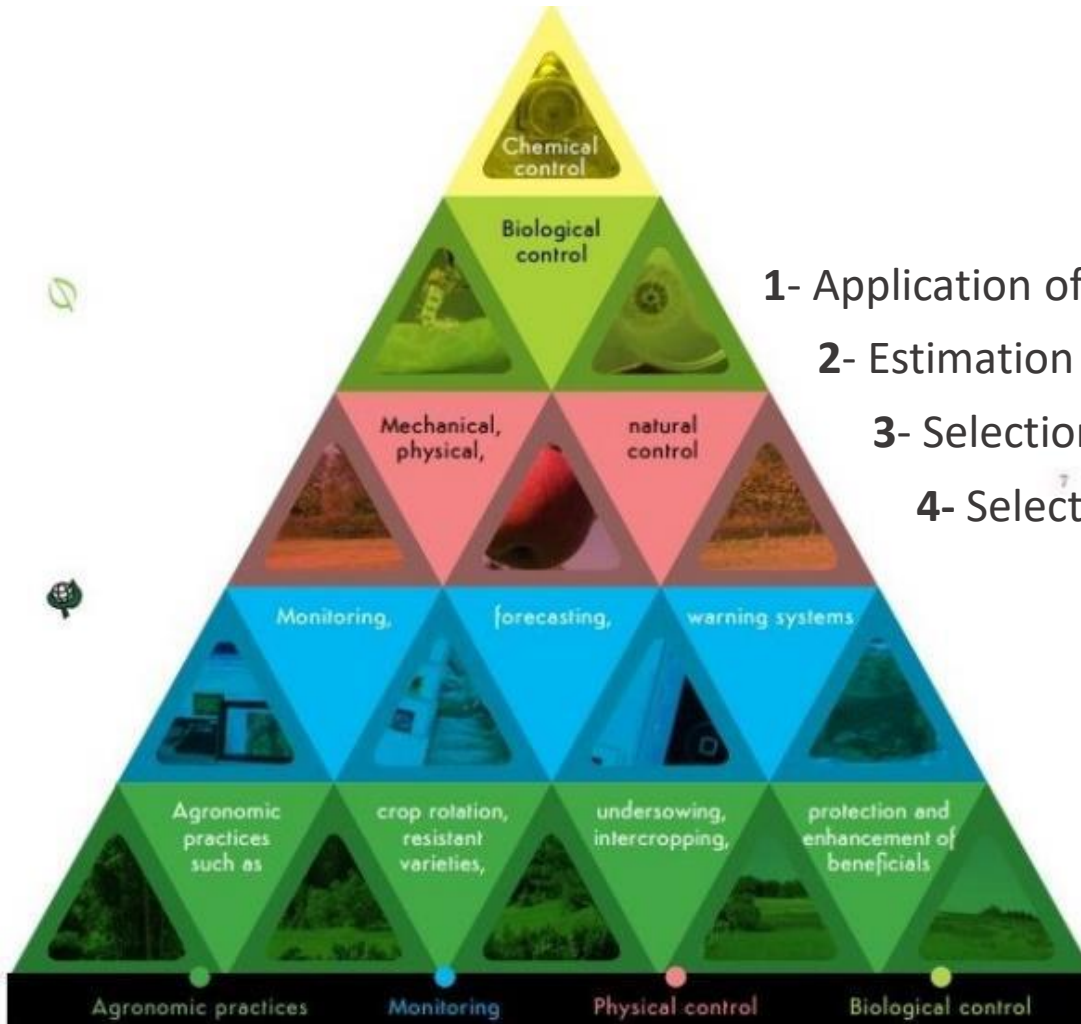


Port

Landscape of Douro Demarcated Region



■ Integrated Pest Management (IPM) pyramide



1- Application of preventive measures (ex. genetic diversity, functional biodiversity)

2- Estimation of damages / Decision support systems (DSS)

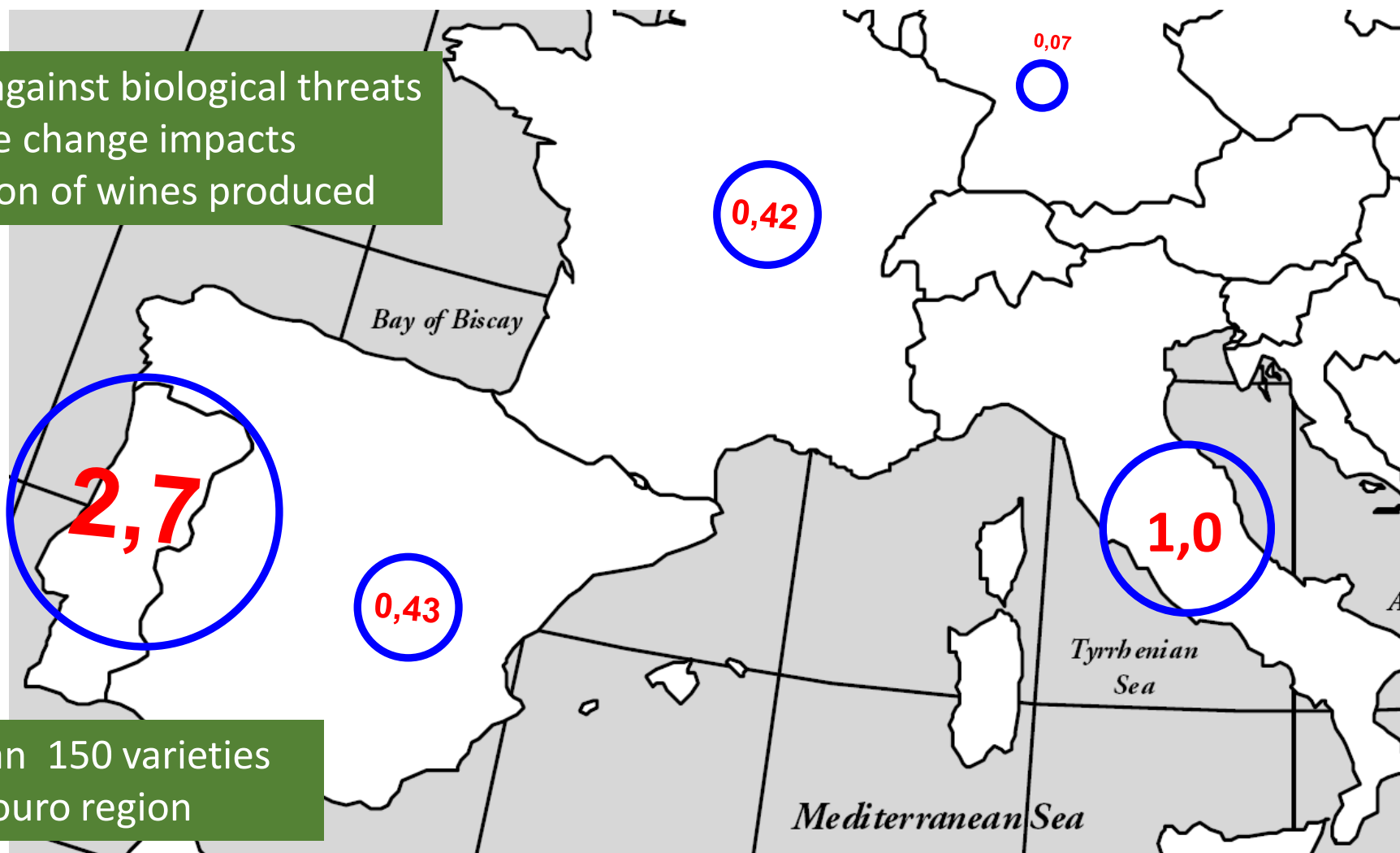
3- Selection of protection methods less harmful (ex. mating disruption)

4- Selection of pesticides (last step)

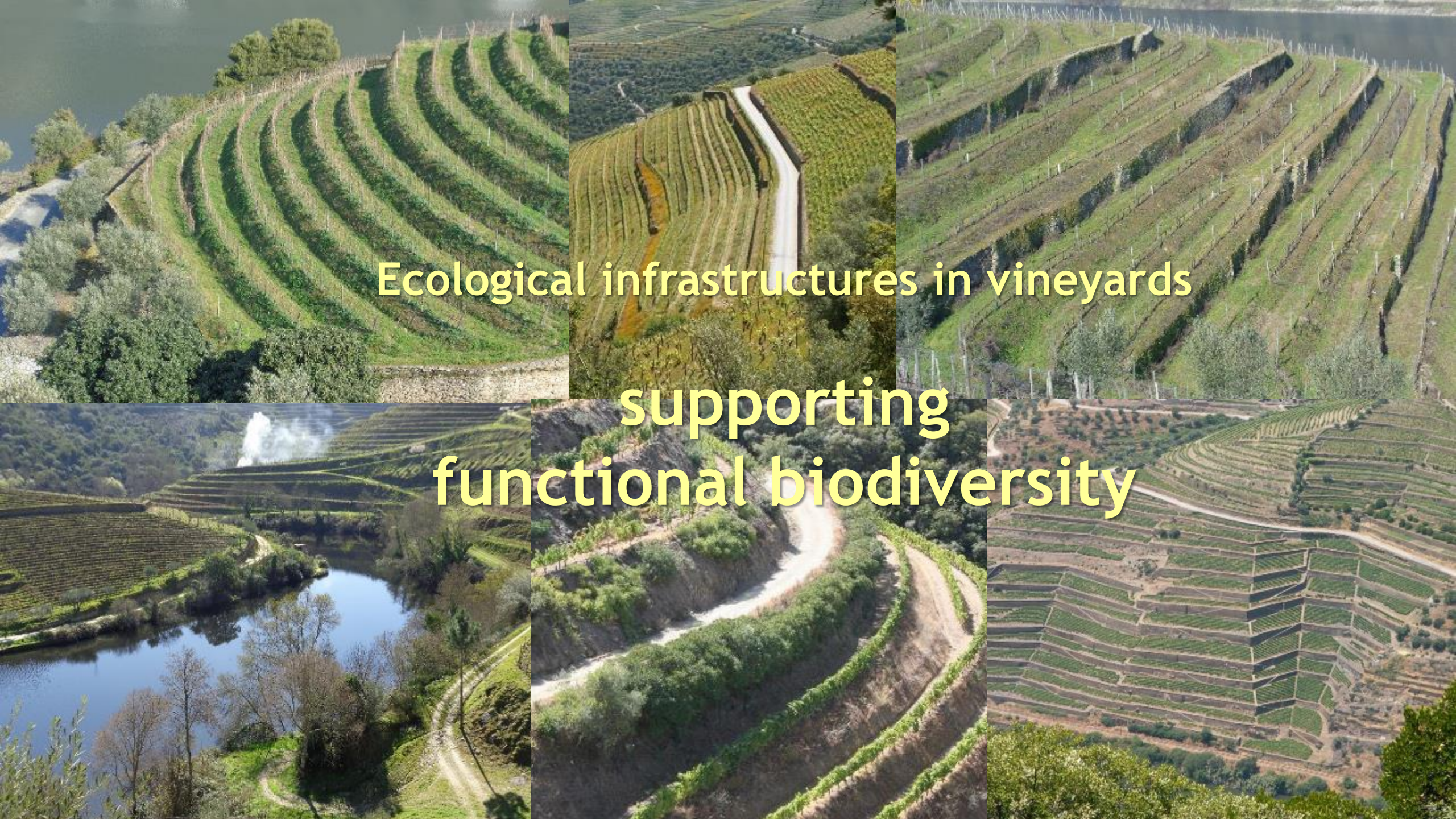
■ Genetic diversity

Density of autochthonous varieties (varieties/km²) in Europe

- Resistance against biological threats
 - Climate change impacts
- Diversification of wines produced



More than 150 varieties
in Douro region



Ecological infrastructures in vineyards

supporting
functional biodiversity

Dry stone walls with olive trees separating plots of vineyards ...



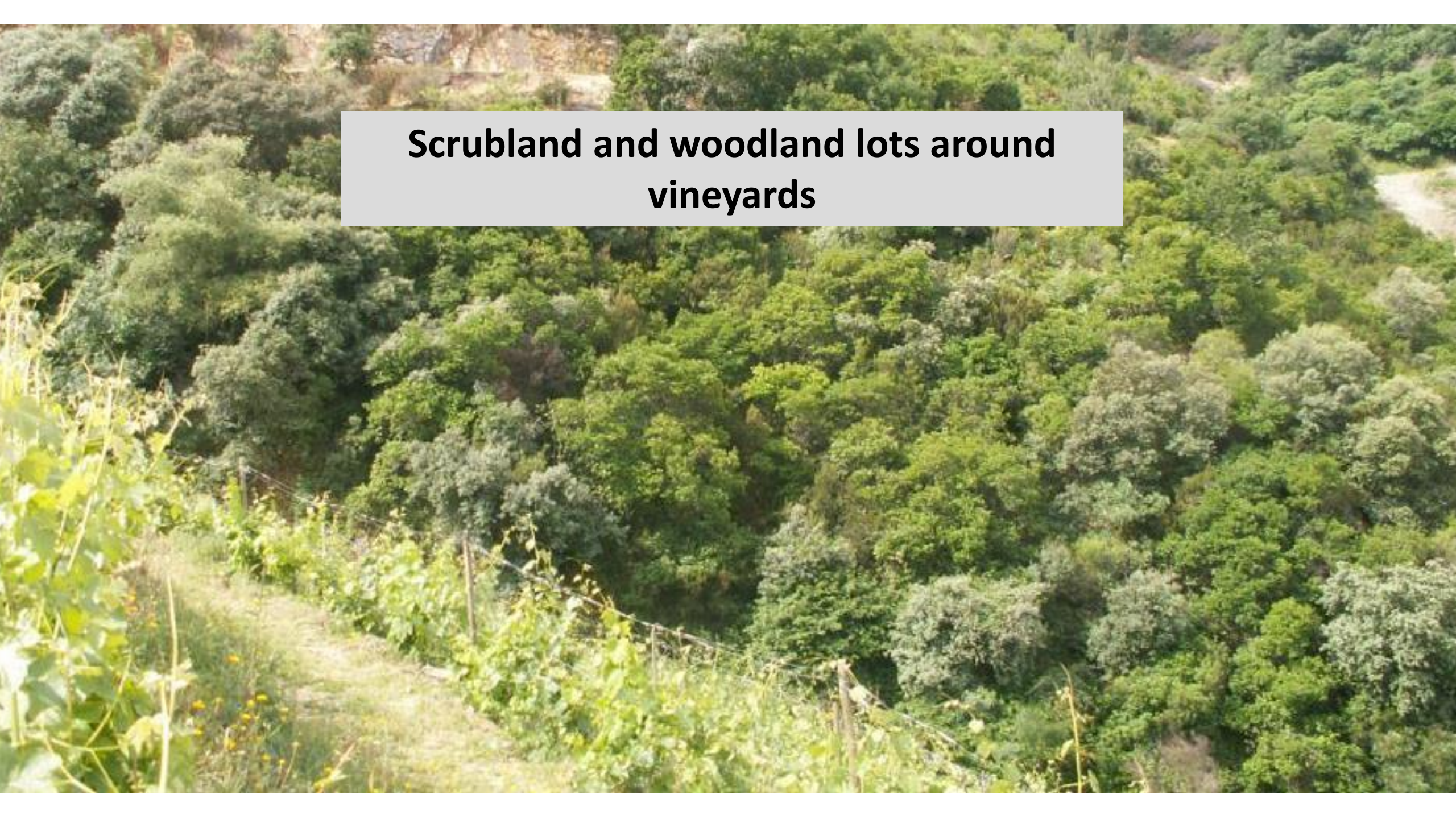
An aerial photograph of a river valley. The river flows through the center, flanked by dense, brownish-green riparian vegetation. On either side of the river, there are terraced vineyards with rows of grapevines. A dirt road or path runs along the top of the vineyards. The landscape is a mix of agricultural land and natural riparian habitat.

High presence of semi-natural areas and other crops

Riparian galleries

Patches of native vegetation on slopes



A photograph of a lush, green hillside covered in dense vegetation. The foreground shows a vineyard with rows of grapevines and some tall, dry grass. The middle ground is filled with a thick forest of various green trees and shrubs. The background shows a rocky, light-colored cliff face. A semi-transparent grey box with black text is overlaid on the upper part of the image.

Scrubland and woodland lots around vineyards

Why do we need Biodiversity?

https://www.youtube.com/watch?v=b6Ua_zWDH6U

Ecosystem Services

(ex: Production of food / wine,
Tourism, “Natural” pest control, pollination, etc)



■ Conservation biological control strategy

Biological control agents

Key-pests

Predators



Parasitoids



Reduce the use of pesticides

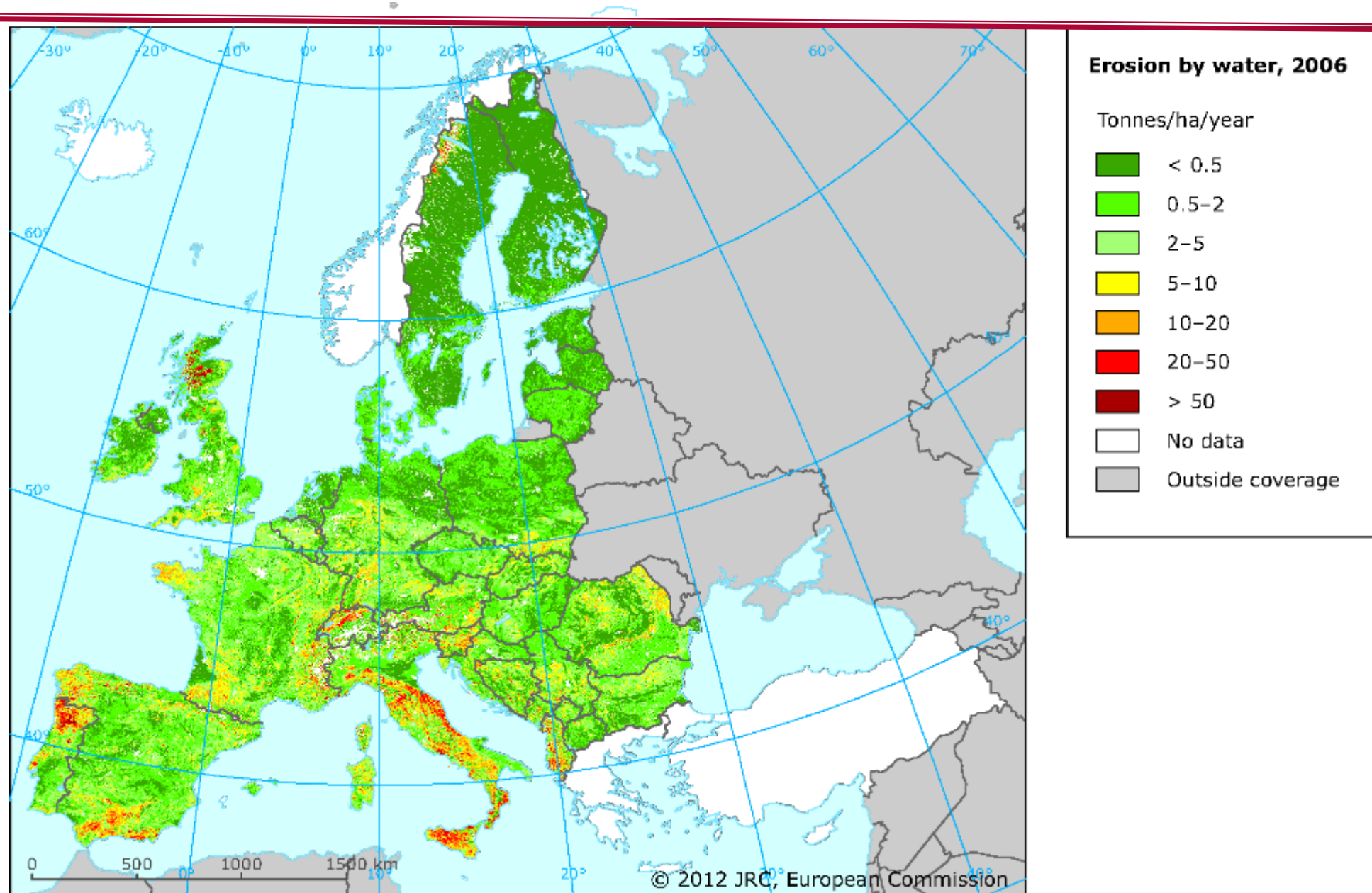
Grapevine moth



Green leafhopper



■ Erosion by Water



Recommending best practices to growers - Management of soil (groundcover)



Due to the **high risk of erosion**, vineyards of Douro region should include **native vegetation**

Reducing the use of herbicides





❑ Implementating of Hedges with local flora







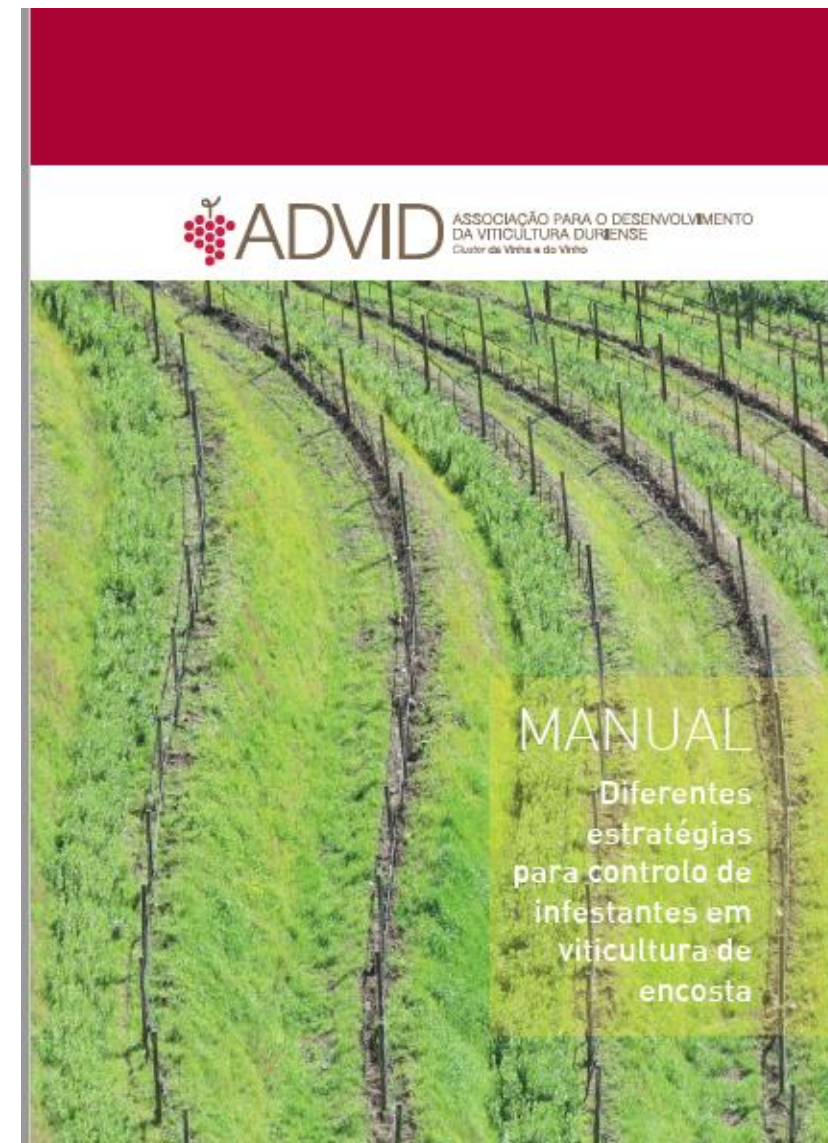
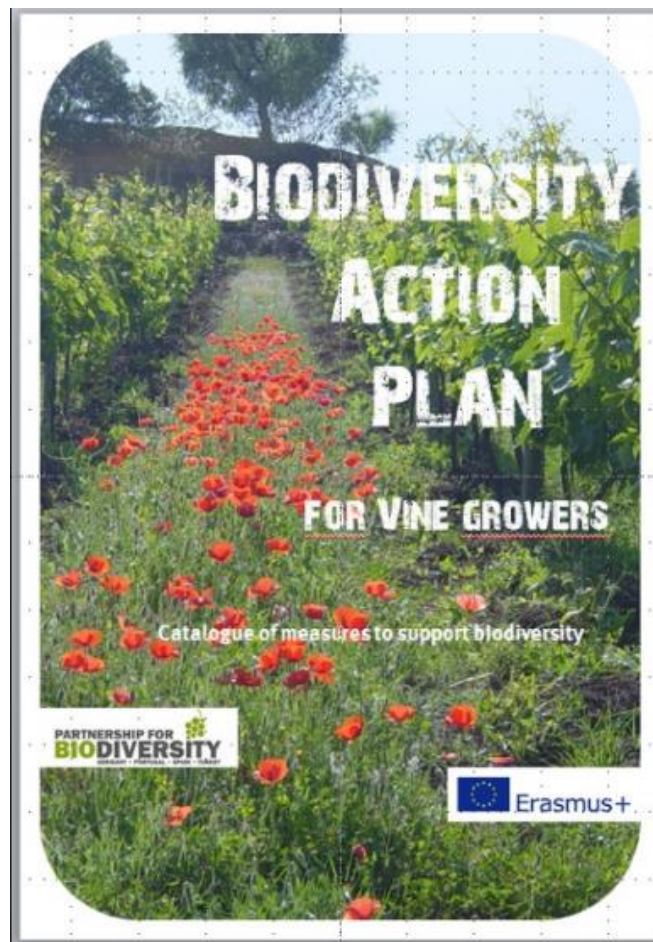
□ Training growers / workers for the protection of native species



■ Implementation of conservation actions to enhance biodiversity in vineyards



Dissemination tools



Monitoring Tools – estimation of damages

Diseases

Weather stations

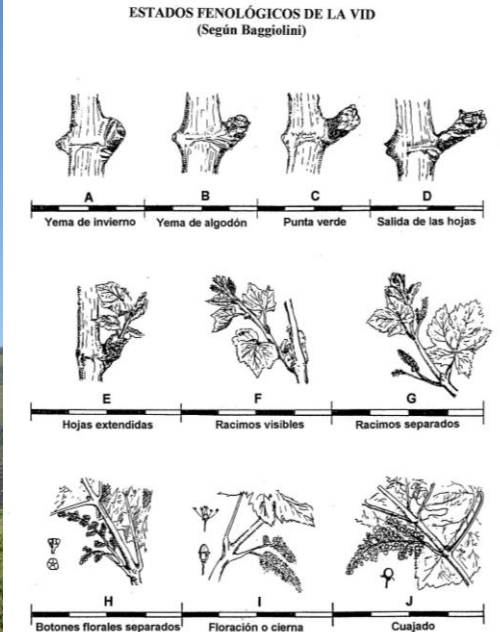
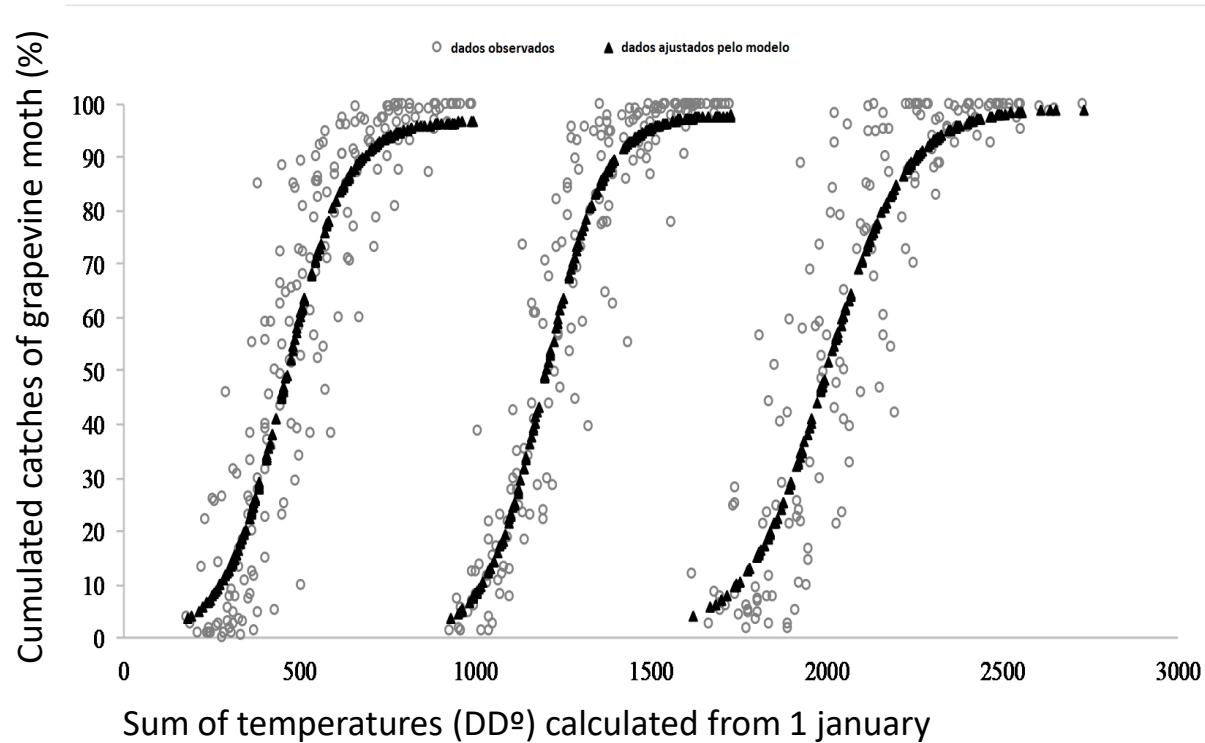


Pests

Traps for monitoring flight of adults



- Development and application of models for grapevine, pests and diseases



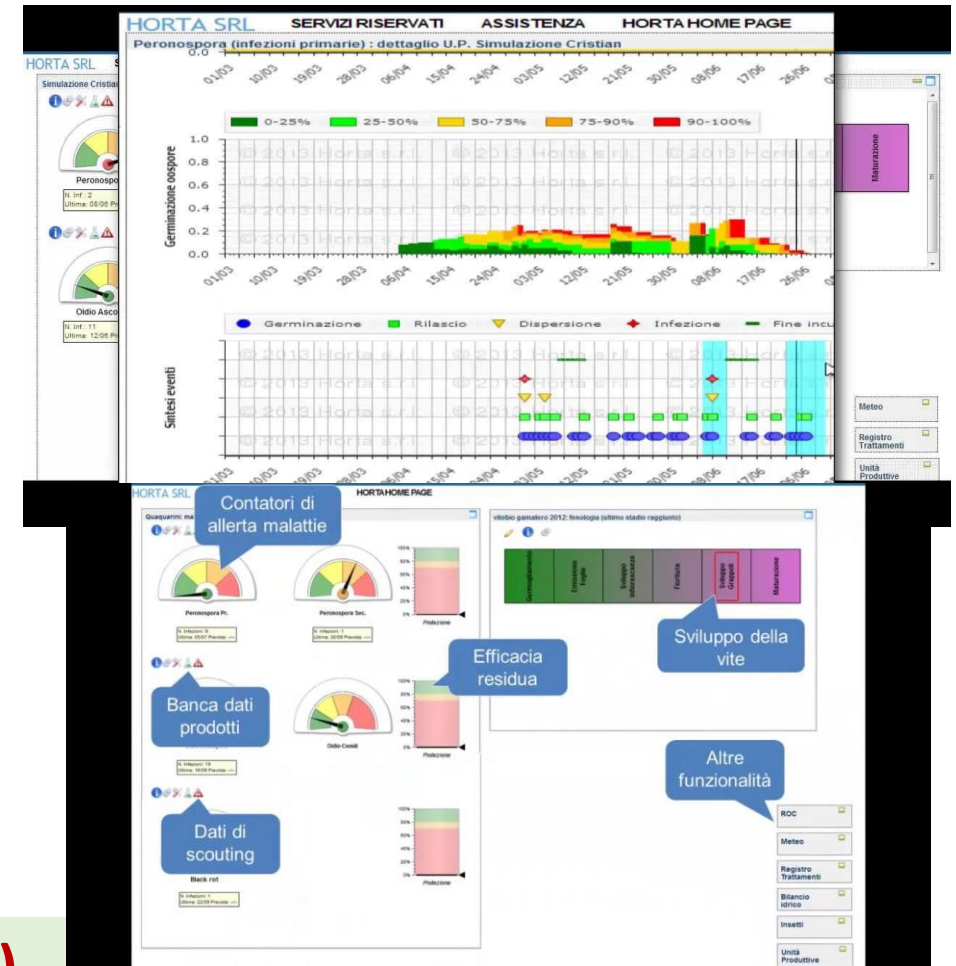
A good predictive capacity of vineyard and pests development is crucial for supporting best decision to decide phytosanitary treatments and cultural operations in vineyards

• Decision support systems

- Connected to weather stations
- Include pests and diseases models
- Indicates the best period for spraying

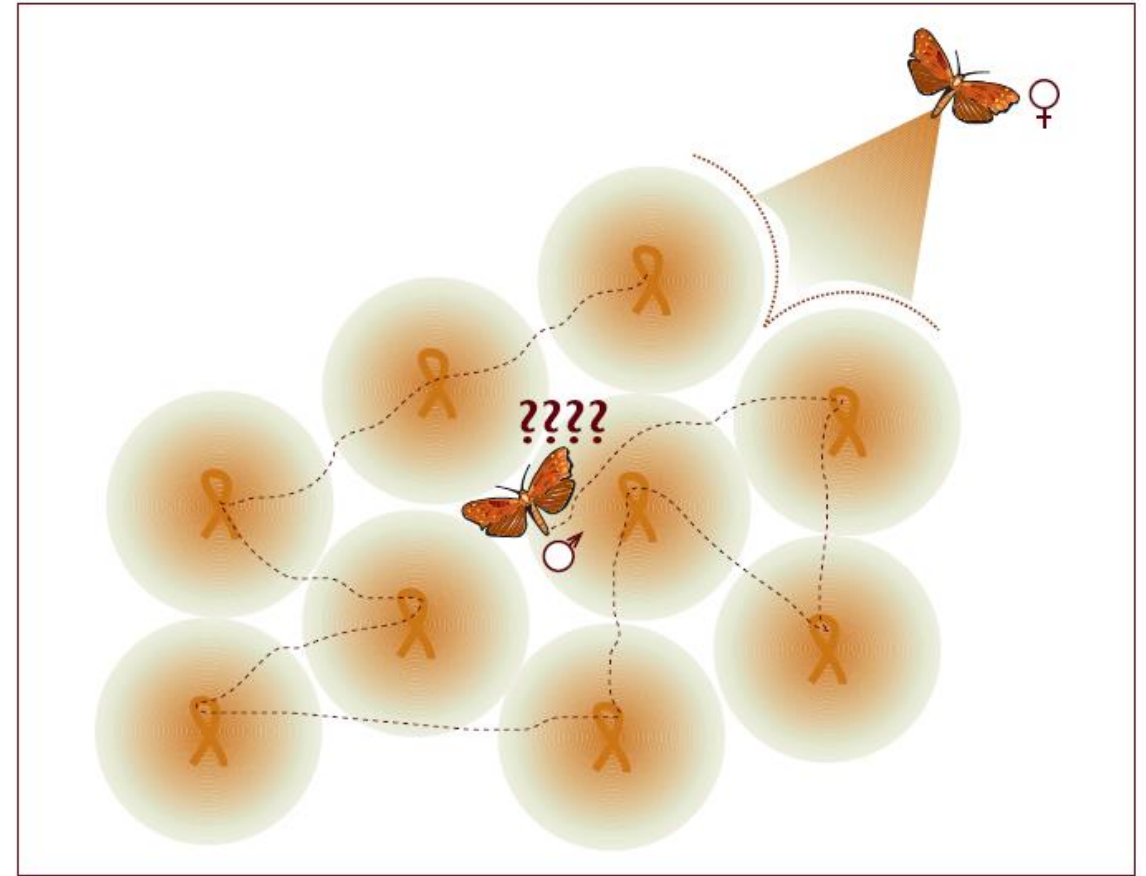


(HORTA Srl.)



Maximization of efficacy of treatment (best targetting)
Saving treatments /environment / and money...

■ Selection of protection methods - Mating disruption - European grapevine moth



Goals

- To reduce the use of insecticides, improving grape quality
- To reduce the impact of viticulture activity (saving beneficial fauna)

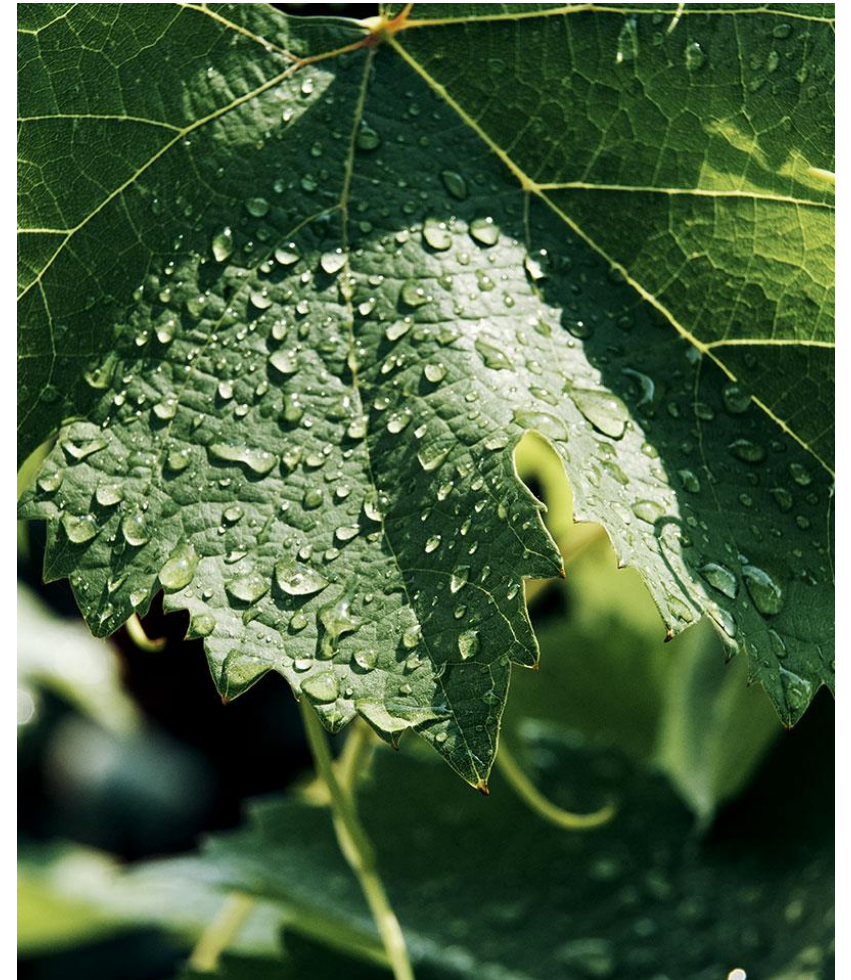
■ Testing new alternatives to control diseases



COPPEREPLACE

Objective: validate integrated, innovative and viable solutions to reduce the use of copper in viticulture and its environmental impact.

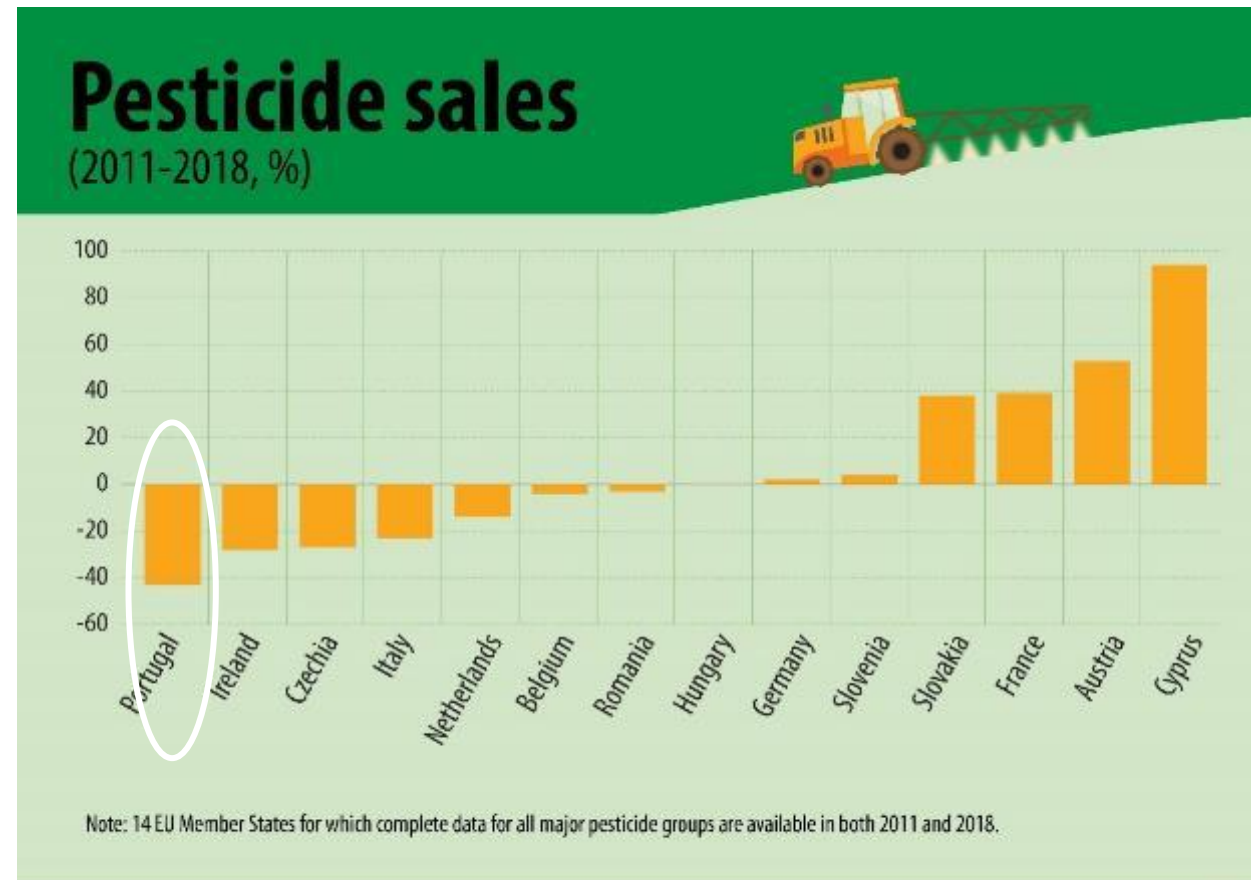
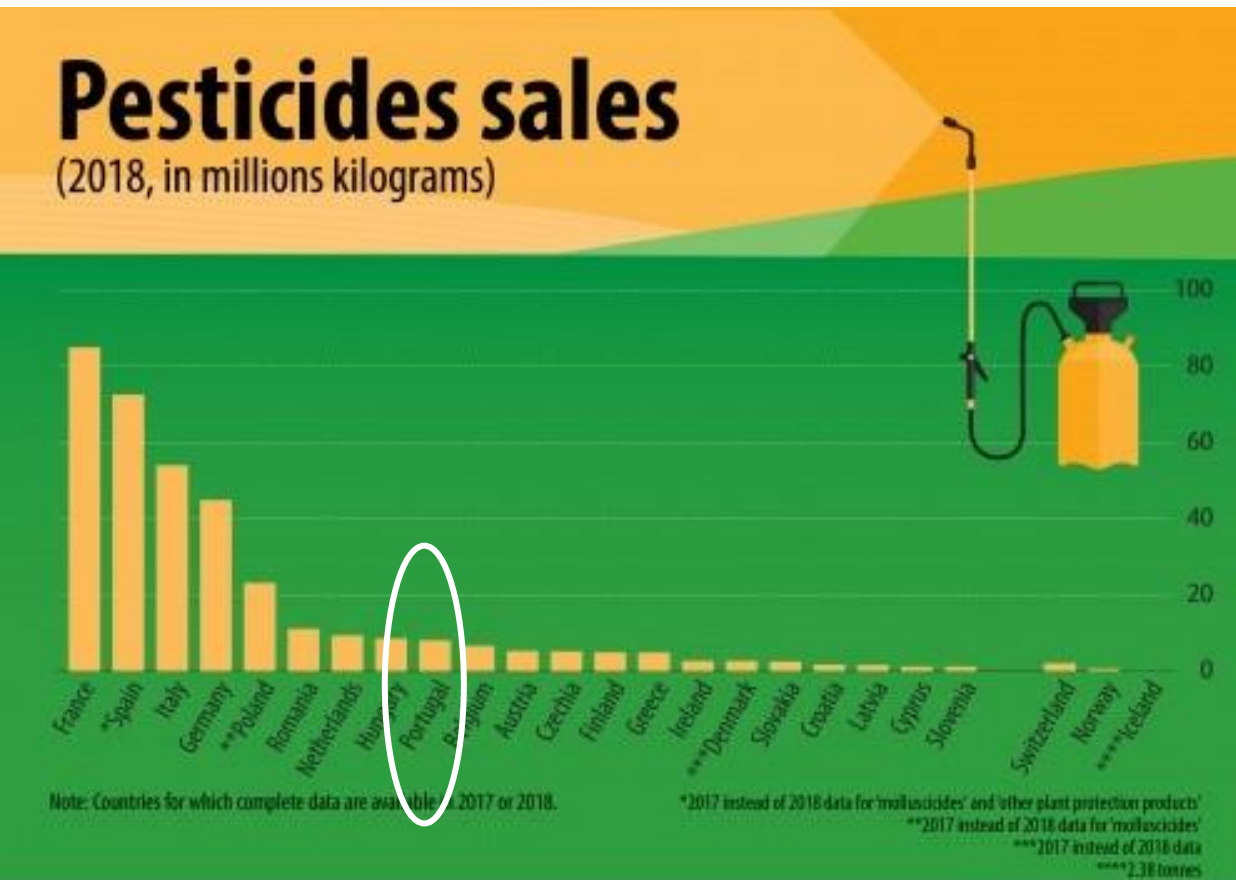
**Interreg
Sudoe**
European Regional Development Fund



<http://coppereplace.com/pt/projeto-coppereplace/>

Contribution for the Sustainable use of pesticides...

- The Sustainable Use of Pesticides Directive / implementation of IPM principles has contributed to a significant reduction of pesticides in 2011-2018 in Portugal



**Thanks
Obrigado**



Questions?

