

Fact Sheet

# BIODIVERSITY PROTECTION IN VITICULTURE IN EUROPE

## WHAT IS BIODIVERSITY?

- ☞ Biodiversity - or biological diversity - is the term given to the variety of life on Earth. In a vineyard, the biodiversity is the diversity of animals, plants and micro-organisms, at the genetic, species and ecosystem level. This diversity is necessary to sustain key functions, structures and processes in this agro-ecosystem. Biodiversity is therefore a broad term that encompasses the diversity of agricultural and natural ecosystems.

## WHY IS IT IMPORTANT?

- ☞ Biodiversity and agriculture are strongly interrelated. In the past, agriculture significantly contributed to the increase of cultural landscape and species diversity in Europe, but nowadays agriculture intensification is one of the main drivers of biodiversity loss. Sometimes some species can be critical for agricultural production, but agriculture also depends strongly on what nature is giving – and biodiversity plays a major role in providing those natural gifts, such as:

- Soil formation
- Maintenance of the hydrological cycle
- Nutrient cycling
- Erosion control
- Pest and disease regulation
- Climate regulation
- Pollination
- Carbon sequestration

- ☞ *The term “agricultural biodiversity” encompasses socio-cultural, economic and environmental elements.*

## POSITIVE IMPACTS OF BIODIVERSITY MANAGEMENT IN THE VINEYARD

*The more diverse a system is, the more resilient or self-regulating it will be. Biodiversity management in vineyards has a positive impact on the crop.*

To ensure a biodiverse vineyard environment, it is key to conserve the habitat and species within. A balanced and natural vineyard environment, with a diverse agro-ecosystem of plants and animals, enhances the grape and wine production in the long term. Almost all evolved animal and plant species related to the natural viticultural landscape benefit the farmers, for example, by combating pests and providing a rich soil and humus to the vine plant. To provide these benefits, the farm area has to be managed in a way that enhances the botanical and faunistic components. In the following we highlight some key management elements for enhancing biodiversity:

### GRAPE VARIETIES



Genetic diversity is always very valuable. In some countries, genetic diversity has been the basis for the development of

blended wines. These wines have balanced profiles, gathering the best characteristics of each variety. Preserving a high number of varieties – some very old and resilient – also has a high environmental benefit, as a genetic variety is ensured. In a changing climate this will provide a good source for adaptation measures.

### DRY STONE WALLS

It is important to build or restore this kind of infrastructure, as it protects and provides shelter for several species of birds, reptiles, insects and spiders.



### COVER CROPS

Natural or seeded vegetation between vine rows, especially when they contain herbs,

flowers etc. contribute to the sustainable management of the crop as it attracts beneficial organisms, which prey on pest species and therefore reduce the need for spraying pesticides. Cover crops also improve the soil by fertilizing it, reducing soil erosion, and can be reused as mulch, which has similar beneficial properties.



### HEDGEROWS

Lines of shrubs and trees are important elements of agricultural biodiversity. They diversify the landscape and provide habitats for plants and animals e.g. by producing shadow and providing nesting places for several bird species. Hedgerows also function as windbreaks, helping to reduce soil erosion from wind and rain and helping to protect young seedlings and crops. They reduce the drying effects of wind on soil and plants, and act as barriers to avoid pesticide drift. An additional effect is that they can prevent the spread of invasive alien plants.



## BIOLOGICAL PEST CONTROL

Cover crops and other ecological infrastructures provide habitat, shelter and food for several beneficial organisms (e.g. ladybirds and wasps). These beneficials in turn reduce the presence of grapevine pests, through parasitism or predation. In the same way, the implementation of nest boxes allows some insectivorous birds to remain in vineyards, contributing to the reduction of grapevine pests as well.



## BIODIVERSITY BEYOND THE FARM LEVEL



Each winery can contribute to the enhancement of biodiversity even beyond the farm level, through decisions about what products, commodities and materials are purchased. Important questions farmers can ask themselves are: How can I optimize the transport? Do the bottles I use have the highest recycling content? Am I using lighter glass? Or will I continue to use cork as a bottle closure?

The preference for cork closures is an example of this, as it conserves Mediterranean cork oak forests. Cork is a 100% sustainable and renewable natural resource that can be recycled into dozens of new products. The cork oak's fire-resistant bark protects it from wildfires that frequently devastate the region, leaving only the cork oak groves to prevent soil erosion, desertification and preserve wildlife habitats. The cork oak also plays a crucial role in CO2 retention.



## LEGISLATION ON BIODIVERSITY

- 🌱 **The European Union Biodiversity Strategy** aims to halt the loss of biodiversity and ecosystem services in the EU and help stop global biodiversity loss by 2020. » <http://bit.ly/29SGDmp>
- 🌱 **Birds Directive:** The Birds Directive aims to protect all of the 500 wild bird species naturally occurring in the European Union. » <http://bit.ly/1nahKR3>
- 🌱 **Habitats Directive:** The Habitats Directive ensures the conservation of a wide range of rare, threatened or endemic animal and plant species. » <http://bit.ly/1Ee1v4R>
- 🌱 **EU Regulation 1143/2014 on Invasive Alien Species:** This Regulation seeks to address the problem of invasive alien species in a comprehensive manner to protect native biodiversity and ecosystem services. » <http://bit.ly/151Jrdc>

## BIODIVERSITY MANAGEMENT: EXPERIENCE FROM OTHERS

### TURKEY

**Topic** || Green Manuring and cover

**Company** || Rapunzel Organic Agriculture contracted farmers

**What was the problem?** || Lack of green manuring, lack of host plants for beneficials

**How was it solved?** || The Company distributed vetch seeds to the farmers. Now farmers are able to enhance soil aeration and quality. Vetch seeds also increase the available nitrogen in the soil and increase the availability of nitrogen for the vine plants through symbiosis with rhizobium.

**Results** || Farmers do not need to buy fertilizers as the vetch plants provide enough nitrogen. Beneficial insects are more present than before as well.

**Investment and benefit obtained** || The investments were the costs for the vetch seeds. The benefits were nitrogen fertilization and increasing the population of beneficial organisms.

**References** || <http://www.rapunzel.com.tr/index.php?plink=rapunzel-organic-farming-projects>

## PORTUGAL

**Topic** " Business and Biodiversity

**Company** " Duorum Vinhos

**What was the problem?** " The company wanted to develop a new vineyard, in a field located inside a classified Natura 2000 area. The presence of several endangered species of "birds of prey", required a detailed incidence assessments of the site regarding birdlife. The conservation of these birds was made a priority and there therefore was a big challenge on how to cultivate the vines while ensuring an effective protection of the habitat and species.

**How was it solved?** " The company implemented an extensive set of impact mitigation and biodiversity promotion actions which were detailed in a Biodiversity Conservation Plan and were monitored. The monitoring results were reported annually as a voluntary commitment under the Portuguese state program "Business and Biodiversity". During the process, the presence of *Oenanthe leucura* (common name "chasco preto" or "Port wine little bird") was discovered and a further management process to protect this specie, as well, was developed. This specie is now the „face“ of one of Duorum Vinhos top wines, depicting the bird on its bottle's labeling.

**Results** " The Company is successfully producing top quality wines with an exporting profile, while preserving priority species and sensitive characteristics of the countryside.

**Investment and benefit obtained** " A big investment was made in the conservation actions and evaluation of its impacts. The benefits were primarily for nature, but there was also a benefit for the company, who developed stronger sale arguments and new market opportunities.

### References

" <http://www.duorum.pt/sustentabilidade/default.aspx?title=sustentabilidade&idioma=en#>

## SPAIN

**Topic** " Biological control with bats

**Company** " Bodegas Enguera / Valencia

**What was the problem?** " Grape moth (*Lobesia botrana*) is a common pest in vineyards. It is a micro moth (Lepidoptera) that harms the grapes. It has been traditionally controlled by spraying chemicals, and lately using pheromones confusion, the latter being a much more environmentally-friendly approach but still needing an annual investment.

**How was it solved?** " Bodegas Enguera decided to install bat refuges around their vineyards in order to control grape moth populations in a more environmentally-friendly way but also with a lower cost. Pheromone traps were kept as a control, and once the bat refuges were installed, no more *Lobesia* specimens were captured on the traps. This pest was therefore entirely controlled thanks to the bat populations established in the vineyard.

**Results** " The installation of more than 200 bat refuges has been successful in the control of a common pest in vineyards, with a low investment and very low maintenance cost in the long-term.

**Investment and benefit obtained** " This case study highlights how working with biodiversity can entail management and economic benefits.

**References** " <http://www.bodegasenguera.com/#>



## GERMANY

**Topic** || Use of cork

**Company** || Winery Brühler Hof (Müller Family) / Rheinhessen

**What was the problem?** || In the last years, many winemakers have reduced or even stopped the use of natural cork in favor of aluminum closures due to different reasons (leakages, cork taste, cost, practicality and marketing). The process of aluminum production has very high negative environmental impacts (energy intensive and large landscape use for mining bauxite) and a reduced use of cork has serious impacts for the cork oak forests in Spain and Portugal.

**How was it solved?** || Despite the problems detected in the past with cork, winery Brühler Hof keeps using this material. Firstly, because the quality of cork has improved in the last years, and secondly because the family is very dedicated to the preservation of cork oak forests.

**Results** || The commitment to the cork forests is so strong that the winery will collect the corks that the customers bring back and send them to recycling centers, or give them to an artist for the production of furniture.

**Investment and benefit obtained** || Cork closures are more expensive than aluminum closures; instead of 8 Cents for an aluminum LongCap, the cork closure might cost 35 Cents or more. But, cork conveys a lot of what is important to the Müllers in respect to culture, wine and ecology. It brings them one step closer to their goal of a sustainable, CO<sub>2</sub>-neutral wine production.

**References** || <http://www.bruehler-hof.de/>

**THE PARTNERSHIP FOR BIODIVERSITY PROTECTION IN VITICULTURE IN EUROPE ...**  
*aims at adapting vine-growing practices to protect, enhance and promote the biodiversity in vineyards, through the development of analysis modules and trainings around Germany, Turkey, Portugal and Spain.*

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