Biodiversity Management in Viticulture Landscapes -Demonstrating Project LIFE+ BioDiVine-

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Abstract. The BioDiVine project involves the study and management of biodiversity in vineyard landscapes. This project benefits of cofunding of the European initiative LIFE+ 2009/2014, it objective is to identify the interest of arrangements in wine regions and adaptation of crop management on biodiversity, landscape and overall environment. The project focuses on the management of six experimental sites (appellations of Saint-Emilion, Limoux and Costières de Nîmes in France, the Douro in Portugal and the Rioja and Penedès in Spain) and a reference site, Saumur-Champigny. Six different partners in the coordination and monitoring of European sites are included in the project. The objectives of this project stem from three complementary fields: environment, agronomy and landscape. Concrete actions for conservation and arrangement will be implemented at each site with the creation of semi-natural complementary areas in vineyards. Parallel with amenities, it is planned to develop an alternative or integrated protection of the vineyard, particularly involving the use of predictive models of disease, development of mating disruption by pheromones, optimization of spraying. Also, technical follow-ups and cartographic analysis with GIS will be conducted to assess the scope of these actions to conserve and enhance biodiversity through appropriate protocols for different specialties of biodiversity: soil microbiology, functional plant biodiversity, birds and small mammals and the RBA method (Rapid Biodiversity Assessment), this one aims at assessing arthropod biodiversity through a trapping system already developed in various French wine regions (M. VAN HELDEN).

Keywords: Viticulture Landscapes, Biodiversity, Amenities, Sustainable Management, Terroir, RBA Method.

1 Introduction

The BioDiVine project involves the study and management of biodiversity in viticultural landscapes. This project benefits of the cofunding of the European initiative LIFE+ 2009/2014 that supports innovative activities in the field of nature conservation and biodiversity.
The BioDiVine project objective is to identify the interest of plot and landscape management in wine regions on biodiversity, landscape and overall environment.

Fig. 1. The logo of the BioDiVine project, which shows the consideration of various aspects of vineyard landscapes, both agronomic and environmental.

2 Location and partners

The project focuses on a reference site, Saumur-Champigny, located in the Loire Valley (France), which already led a program on biodiversity wine for several years, as well as six experimental sites: Saint-Emilion, Limoux and Costières de Nîmes in France, the Douro Valley in Portugal and the Rioja and Penedes in Spain.
Six different partners in the coordination and monitoring of European demonstration sites are involved in the project LIFE+ BioDiVine. The IFV (French Institute of Vine and Wine) and ARD-VD (Association for Research and Development in Sustainable Viticulture) are partners in charge of the different French sites and are technically coordinating the project activities. The Spanish partners are ICVV (Instituto de Ciencias de la Vid y del Vino) and DIBA (Diputacio de Barcelona) which will implement the project activities respectively on the site of La Rioja and Penedes. In Portugal, ADVID (Associação para o Desenvolvimento da Viticulture Duriense) will be in charge of the Douro demonstration site. Finally, Euroquality provides administrative and logistic management of the project.

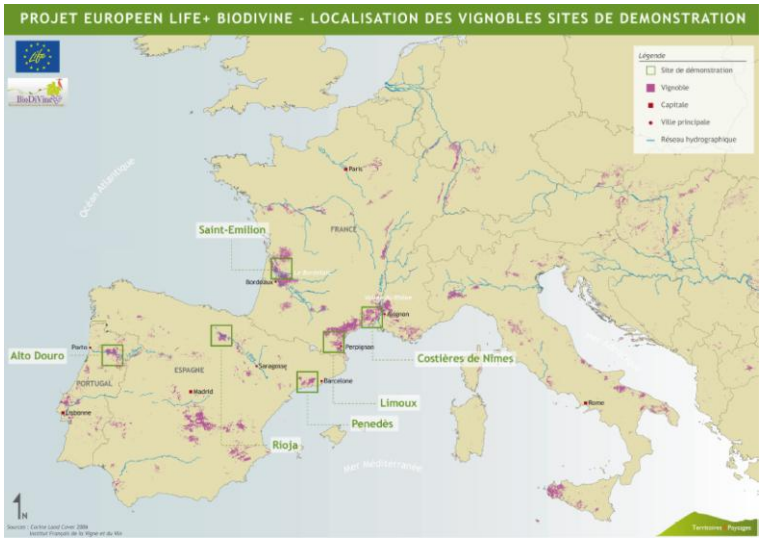

Fig. 2. Location map of six experimental sites participating in the project.

3 Objectives and concrete actions

The objectives of this project stem from three complementary fields: environment, agronomy and landscape; allowing demonstrating that a biodiversity friendly management of the landscape and an environmental action plan are compatible with high quality grape and wine production. Management plans will be proposed for each of the experimental sites by the end of the project.

Concrete actions for conservation and management will be implemented on each experimental site with the creation of semi-natural complementary areas in vineyards (introduction of ground cover plants in and around vineyards, hedges, restoration of stone walls and other elements of land management...)
These different actions are intended to improve the overall biodiversity, landscape structure but also to contribute to the control of pests and diseases, reduce soil erosion and runoff and reduce water contamination by pesticides. Thus, appropriate landscaping implemented locally would be an element of response to enable a positive impact on the environment, while improving product image and landscapes quality.

Parallel to conservation actions, the project plans to enhance the implementation of integrated protection of the vine, especially through the use of predictive models of disease, the development of mating disruption by pheromones, and the optimization of spraying.

Monitoring of the result of these actions will be conducted to assess the scope of their impact on conservation and restoration of biodiversity through appropriate protocols at different levels: Arthropod monitoring through the RBA method (Rapid Biodiversity Assessment already developed in various wine regions), soil microbiology, botanical plants, birds and small mammals.
The RBA method, developed in Australia by the arthropods specialists led by Oliver and Beattie (1993), aims at assessing arthropod biodiversity, through a trapping system (combination of “combi” and pitfall), while avoiding the classical taxonomy. Thus, the measurement unit is the “morphospecies”. In 2004, Krells’ studies have confirmed and validated the scientific validity of the RBA method on arthropods. Furthermore, another study conducted in Switzerland by Duelli and Obrist (2005) confirms that the RBA is a very good indicator of biodiversity in the understanding of local trends in short and medium term.
For several years M. VAN HELDEN has been developing this method in various French wine regions both at landscapes and plot scale. This process will be established at each site and followed by trainees supervised by the ARD-VD.

Fig. 3. The system of trapping by the RBA method for capturing arthropods by pitfall for crawling insects, and "combi" for flying insects.

In addition, a cartographic analysis will be conducted at each site to locate the main landscape units using the Corine Land Cover database, but at a much finer scale through Geographic Information Systems (GIS). These tools will facilitate analysis and understanding of the landscape at each site from aerial photographs and field surveys.

Moreover, many public awareness activities and dissemination of the project results are planned throughout the project to interest the greatest number, but also to attract the attention of winemakers and wine professionals such as the creation of a public website (www.biodivine.eu), the implementation of information boards on sites, the

publications of articles and press releases, the organization of “open days” on experimental sites, as well as training workshops.

Finally, beyond the six experimental sites, the BioDiVine project aims to promote in all European countries actions supporting biodiversity that are adapted to each vineyard context (climate, geology, slope, plot type, management systems ...).

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