



GREEN INFRASTRUCTURE IN WINE-GROWING LANDSCAPES

Nature-based solutions and recommended
best practices in vineyards

Identified problem:

Conventional vineyard management (intensive land use, removal of natural vegetation and frequent use of heavy machinery) causes soil compaction and erosion, and reduces water infiltration capacity, which can affect wine production and the local ecosystem. In addition, excessive use of agrochemicals can contribute to soil and water contamination and loss of biodiversity. Taken together, these practices alter the water cycle, degrade the natural environment and can cause **progressive changes to watercourses** in the wine-growing landscape, jeopardising the sustainability of vineyards and the ecosystems that surround them.

Good practice recommended by ECOSPHEREWINES :

EFFICIENT WATERCOURSE MANAGEMENT AND SUSTAINABLE DRAINAGE

Efficient management of watercourses in vineyards is a key strategy for addressing the challenges of climate change and drought, especially in wine-growing regions where water scarcity is a challenge. The **conservation of natural watercourses and traditional water management systems**, and the **use of sustainable drainage systems** that promote natural water infiltration into the soil, improve vineyard water management and increase ecosystem resilience. When properly managed, the use of these ecological solutions provides **multiple** environmental, social, economic and cultural **benefits**, commonly described as **ecosystem services**.

How can this best practice be implemented?

1. **Assess** water behaviour in the vineyard by analysing runoff flows, soil and vegetation conditions, and identify eroded areas, lost or degraded watercourses, and impermeable areas or areas with low water infiltration.
2. **Design the new vineyard using generative hydrology practices** following the contour lines.
3. **Promote riparian vegetation and take advantage of small wetlands** in areas of greater water accumulation, in accordance with current regulations, to retain and infiltrate water naturally into the soil. These areas of great biodiversity are also thermal refuges that increase the vineyard's resilience in times of extreme heat.
4. **Restore traditional surface drainage systems** such as vegetated ditches (which redirect surface water by gradually infiltrating it into the soil) or dry stone channels (which conduct water, prevent erosion and promote biodiversity).
5. **Maintain vegetation cover** between rows of vines (perennial grasses and legumes) to improve infiltration and prevent soil erosion; and/or **apply ecological mulch** (straw, compost, harvest residues, etc.) to reduce water evaporation.
6. **Rationalise irrigation use** with efficient, precision systems (drip irrigation) to use only the necessary amount of water.

What ECOSYSTEM SERVICES does efficient water management provide in the vineyard landscape?

- **Regulation:**
 - Regulation of the water cycle, reducing runoff, preventing erosion and promoting natural infiltration and aquifer recharge.
 - Improvement of soil quality, water quality and the nutrient cycle through runoff control.
 - Promotion of biodiversity through the creation and conservation of habitats for local flora and fauna.
 - Thermal and humidity regulation, increasing resilience to climate change.
- **Cultural:**
 - Aesthetic improvement of the wine-growing landscape, promoting cultural and educational values associated with sustainable agricultural practices.



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