



GREEN INFRASTRUCTURE IN WINE-GROWING LANDSCAPES

Nature-based solutions and recommended
best practices in vineyards

Identified problem:

Climate change is altering growing conditions in vineyards, affecting both the vegetative cycle of the vine and the quality of the grapes. Rising temperatures, irregular rainfall and the increased frequency of extreme weather events are forcing a rethink of traditional vineyard management practices, such as irrigation, manual leaf removal and winter pruning, among others.

Best practice recommended by ECOSPHEREWINES: CHANGES IN PRUNING PATTERNS

Vineyard pruning is an essential practice for regulating vine growth and achieving an appropriate balance between vegetative development and grape production. It is essential to correctly **adjust the timing, intensity and type of vine pruning**, in order to reduce the effects of climate change on plant development, optimise the vineyard's annual yield and maintain adequate vigour and phytosanitary conditions. Adequate pruning patterns provide **diverse** environmental, social, economic, and cultural **benefits**, commonly described as **ecosystem services**.

How can this best practice be implemented?

1. **Observe the vineyard and the weather** to detect early signs of water, heat and health stress.
2. **Choose the right time to prune** to avoid late frosts on the shoots or premature heat.
3. **Adjust the intensity of pruning**, assessing the growth and condition of the plant, to decide how many shoots to leave or remove. In conditions of heat or drought stress, reducing the load can help the plant to concentrate its resources and maintain its health and quality.
4. **Select the most appropriate type of pruning**, depending on the variety, the conditions of the plantation, and the terroir. **Short** pruning (e.g. Cordon Royat or Gobelet, among others) will favour smaller bunches, but with a higher concentration of sugars and aromas. On the other hand, **long** pruning (e.g. Guyot) allows for more bunches per vine, making it suitable for regions with less climatic stress. **Green pruning** during the growing season improves ventilation, promotes uniform ripening of the bunch, and reduces the risk of fungal infections. **Precise mechanical pruning** is a pruning method that can be considered for large plots, when conditions are not limiting, and is suitable for high production targets.
5. **Manage the load** (number of buds left) according to conditions/variety: choose fewer buds for greater vegetative vigour and more shade, but lower production; or leave more buds for higher production, but possible vegetative imbalance.

What ECOSYSTEM SERVICES do changes in pruning patterns in vineyard landscapes provide?

- **Provision:**
 - Sustainable grape production, ensuring yield
 - Improvement in wine quality, by employing pruning guidelines adapted to climate change that allow for better preservation of the balance of compounds in the grapes.
- **Regulation:**
 - Regulation of the microclimate and soil protection, maintaining a balance between shade, open space and vegetation cover.
 - Pest and disease control through adequate ventilation and promotion of plant health, reducing the risk of infection with pruning practices that avoid large wounds or cuts that are made too early, which facilitate the entry of pathogens such as wood fungi.
 - Improved water use, facilitating water retention in the soil, improving its moisture content and reducing evaporation.
 - Increased biodiversity, encouraging the presence of beneficial plants and animals.
- **Cultural:**
 - Preservation of the traditional agricultural landscape, maintaining the aesthetics and cultural identity of the vineyard as part of the rural heritage, through the use of sustainable changes in pruning.
 - Creation of demonstration spaces through the use of new forms of pruning adapted to climate change (delay in winter pruning, trials with autonomous pruning robots, etc.), examples of agroecology and the transition to more conscious practices.



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