ResAlliance

Type of solution: Management Sector: Agriculture, Agroforestry, Forestry
Good practice(s): Management alternatives, Protection against biotic and abiotic hazards

Firebreak vineyards: natural solutions to retard the spread of forest fires

Tsiakkas Winery as a Case Study: The Role of Surrounding Vineyards in Containing a Mega Fire.

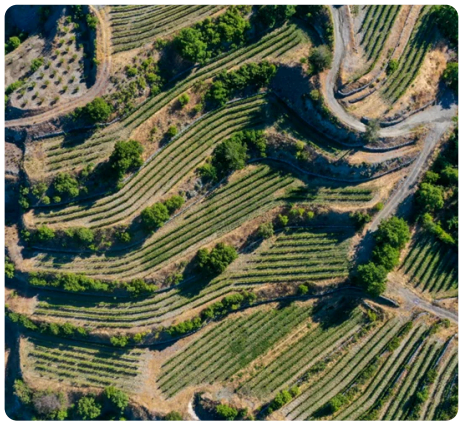

Figure 1. Vineyards in Agros.
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Figure 2. Tsiakkas Winery two years after the Saittas Fire in 2007. Winery, house and pinewood trees remained intact.
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/// Context ///

Winemaking in Cyprus dates back to ancient times, as indigenous grape varieties and traditional winemaking techniques are easy to trace. Cyprus is home to unique grape varieties such as Xynisteri (used to make white wine) and Mavro (used to make red wine), as well as Commandaria, a famous sweet dessert wine. The island of Cyprus has many examples of vineyards being used as firebreaks. During the mega fire in the Saittas area in 2007, the Tsiakkas winery was completely saved by the fact that the strategically placed vineyards around the winery acted as a pure firebreak. The fire burned the entire surrounding pine forest, but the old pine trees inside the winery are still thriving today. Tsiakkas' example was noted by the services, and since then vineyards have been considered an ally of the operational fire-fighting teams, who take them seriously in both prevention and fire-fighting planning. The case for using vines as a fire protection measure is made even more compelling by photographs taken the day after the fire, where the black is interrupted by green vineyards unaffected by the fire. Successful use of this tool depends on two main factors: good vineyard management and the characteristics of a green vineyard. The sap retained by these plants, the humidity they generate, the planting structures and the islands in which they are installed are all factors in a multi-level useful tool for fire management.

/// Solution for a Resilient Future ///

Benefits of Using vineyards as firebreaks:

- Levels of moisture – Natural resistance to fire: vine plants have deep rooting system enabling deeper access to soil moisture (as well as soil stabilization reducing soil erosion). Their leaf structure is characterized by high moisture levels when green, while the coverage they provide the soil with preserves the ground moisture.
- Effective fuel reduction: the management of the land (pruning, watering, removal of debris) is very important in preventing a fire as well as breaking it's spreading.
- Structural and spatial benefits: the way planting is structured in isles, create physical barriers, fire is retarded by the moisture of the slow-burning leaves, reducing spreading speed, helping fire services in dynamics as well as time management, maintenance and accessibility.
- Economic and environmental benefits: vineyards as fire breaks provide a win-win scenario both for economic / business orientation as well as environment. It is a well-known ancient practice – nature based solution, where vineyards provide a multilevel frame of environmental economics offering a lot of secondary products : preventing Soil Erosion, wine Making, wine to preserve other foods, sweets from vines juices, use the leaves in cooking as well as sell the grapes as fruit.

More to the above, vineyards also provide aesthetic to the land mosaic (Figure 1) and add to the community value providing not only to economy, but to fire safety as well, offering a sense of security. Having mentioned all the above, it is clear that vineyard planting is one of the many tools that can be included in synergy and combination of other on this battle to mitigate the results of weather phenomena. Integration into other strategies (drystone walling, controlled grazing, prescribed burning

etc), strategic management of areas can be really helpful. Also, vines seem to adopt perfectly different kind of terrains as well as high temperatures, a really important factor into resilience efforts.

Implementation Considerations:

In order to use this tool in the most beneficial way and maximize the effectiveness of vineyards as firebreaks, we must consider Strategic Areas to plant vine-zones (including other fire-resistant landscaping and infrastructure), to ensure their proper maintenance and management and create an effective set of incentives to help private owners invest more in vineyards as firebreaks. One of the big challenges concerns the level of incentives and how they can be made really attractive to have an effect. The discussion mainly concerns the incentives of small landowners and whether the incentives that will be granted will really be attractive and serve the sustainability of the venture. Specifications and recommendations should be made for financing professional networks for this purpose, or in the context of social work.

Figure 3. Vineyards designed with dry stone walls, working as fire breaks and soil retainers.
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Figure 4. Vineyards intact five days after the Paphos Fire (2024).
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/// Always Moving Forward ///

The planting of vineyards, as a public good for the prevention of forest fires and also as an important tool for soil conservation, is high on the list of priorities of the Cyprus Forestry Department. As a solution for the abandoned areas, a pact of subsidies for the planting of vines for purposes of public interest and benefit, and not necessarily for commercial use, is being considered. In addition, as mentioned in the previous section, within the framework of broader strategies, the specific practice is included in combination with the construction of dry-stone walls, the exploitation mechanisms of abandoned lands and their use by the small wineries in the mountains, which do not invest in quantity but in quality (as smaller plots of land can therefore be excellently used).

The Cyprus Forestry Department is planning training in the near future on fire prevention practices, including the fire retardant properties of vines. In addition, strategic management areas are being developed that include vineyards as firebreaks as well as controlled grazing and prescribed burning.

Further information

- Thach, L. 2018. The amazing resilience of wine grape vineyards, Wine. Economics and Policy. Elsevier, Amsterdam, 7(1), 1-2. https://doi.org/10.1016/j.wep.2018.04.002; https://www.researchgate.net/publication/324962614_The_Amazing_Resilience_of_Wine_Grape_Vineyards
- Tsiakkas winery vineyards. https://tsiakkaswinery.com/winery/vineyards/ (Accessed 21 August 2024)
- Republic of Cyprus, Ministry of Agriculture, Rural Development and Environment, Department of Forests website. https://www.moa.gov.cy/moa/fd/fd.nsf/contact_en/contact_en?OpenDocument (Accessed 21 August 2024)

Acknowledgment / Contribution

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