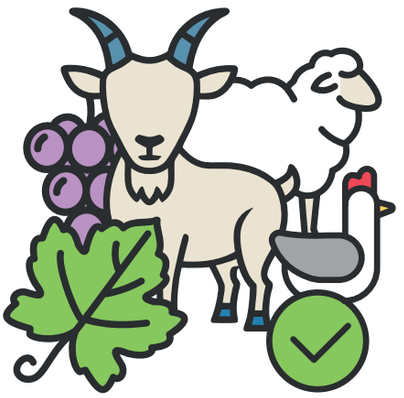

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ECOSPHEREWINES

GREEN INFRASTRUCTURE IN WINE-GROWING LANDSCAPES

Nature-based solutions and recommended best practices in vineyards

Identified problem:

Traditional **soil management** in vineyards, based on herbicides and mechanical tillage, contributes significantly to erosion and loss of soil fertility. Herbicides alter the biota, interfere with the nutrient cycle, increase susceptibility to disease and deteriorate water quality. Mechanical tillage, on the other hand, alters soil structure, reduces biodiversity and compromises ecological functions. It can also damage roots, vine trunks and even bunches, especially between rows. Taken together, these practices have a negative impact on soil health and the conservation of the wine-growing landscape.

Best practice recommended by ECOSPHEREWINES:

USE OF GRAZING IN THE VINEYARD

The use of grazing to control herbicide-resistant weeds in vineyards **reduces soil erosion**, as it not only maintains vegetation cover that protects the topsoil, but also **improves its fertility** and **promotes biodiversity and soil structure** by recycling nutrients through animal manure. In addition, grazing reduces the use of machinery for clearing work, promoting more sustainable agriculture that is less dependent on chemical inputs such as fertilisers and herbicides. When properly managed, grazing provides **diverse** environmental, social, economic, and cultural **benefits**, commonly described as **ecosystem services.**

How can this practice be implemented?

1. **Assess** the **condition of the soil and existing vegetation:** this will help you determine whether grazing can be effective and whether the existing vegetation is suitable for animal consumption.
2. **Plan the season** for grazing: ideally when vine growth is less active (after harvest, during winter or in early spring before bud break).
3. **Select the most suitable herd** for grazing: **sheep** and **geese** are suitable for controlling low unwanted weeds, **goats** can handle larger shrubs and/or weeds, and **chickens**, in addition to controlling weeds, are used for biological pest control, as they feed on insects, larvae, snails, slugs, etc.
4. **Ensure** an **appropriate stocking rate** (number of animals/ha) to avoid overgrazing and excessive soil compaction.
5. **Design the most suitable fences** for rotation, preventing small animals (chickens) from directly accessing the vines: choose **mobile fences** that facilitate the movement of the installed infrastructure or **grazing areas** that divide the vineyard into small plots, so that they can be easily rotated, ensuring that each area can recover. Also, be sure to create access points and paths that allow livestock to move between areas without difficulty, avoiding damage to vines and soil.
6. **Determine** the **frequency of herd rotation:** the herd should be moved frequently so that it does not concentrate in a single area and cause damage to the roots or alter the soil structure.

What ECOSYSTEM SERVICES does grazing in vineyards provide?

- **Provision:**
  - Utilisation of livestock manure to fertilise the vineyard, providing natural nutrients that enrich the soil and improve the health of the vines, reducing the need for chemical fertilisers.
  - Grape production using sustainable practices.
  - Indirect production of manufactured products (eggs, milk, wool, etc.) by livestock farmers.
- **Regulation:**
  - Reduction of evaporation by keeping the soil covered with controlled vegetation, which reduces direct exposure of the soil to solar radiation.
  - Improvement of soil structure and water infiltration, and prevention of erosion (reduction of compaction), especially on sloping land and/or loose soils.
  - Enrichment of soil biodiversity by maintaining heterogeneous vegetation that serves as habitat and a source of resources for a variety of insects and animals.
  - Fire mitigation due to the ability of animals to consume dry vegetation, shrubs or tall grasses.
- **Cultural:**
  - Preservation of the traditional wine-growing landscape and promotion of sustainability, encouraging sustainable environmental education and creating attractive and diverse landscapes.
  - Direct collaboration between winegrowers and livestock farmers, revitalising traditional practices that link both groups, thereby strengthening social and cultural ties in rural areas.

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