

Restoring optimal **Soil** functionality in degraded areas within organic **Vineyards**

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Fig. 1. Soil erosion/exposed roots.



Fig. 2. Vineyard preparation, Italy.

Project RESOLVE (March 2015 – February 2018)

Soil erosion (Fig. 1) and improper land preparation methods before planting (Fig. 2) present a problem in organic vineyards, where compensating measures (for example, with externally introduced fertilizers) are not permitted.

As a consequence, grapevine development, vine health and grape production and quality is often negatively influenced at least in parts of vineyards (Fig. 3) characterized by soils with reduced functionality (Fig. 4).

Problems can be related to soil compaction and oxygenation, poor organic matter content, plant nutrient availability, imbalance of elements (Ca/Mg, K/Mg, P/Fe, and Fe/Mn) and water deficiency.



Fig. 3. Degraded part of vineyard, Slovenia.



Fig. 4. Soil profiles of degraded (left) and preserved soil (right).

Aim of project RESOLVE

To re-store soil functionality in degraded areas of organic vineyards

3 selected agronomic strategies include:

1. Compost additions to soils



2. Legume-based green manure

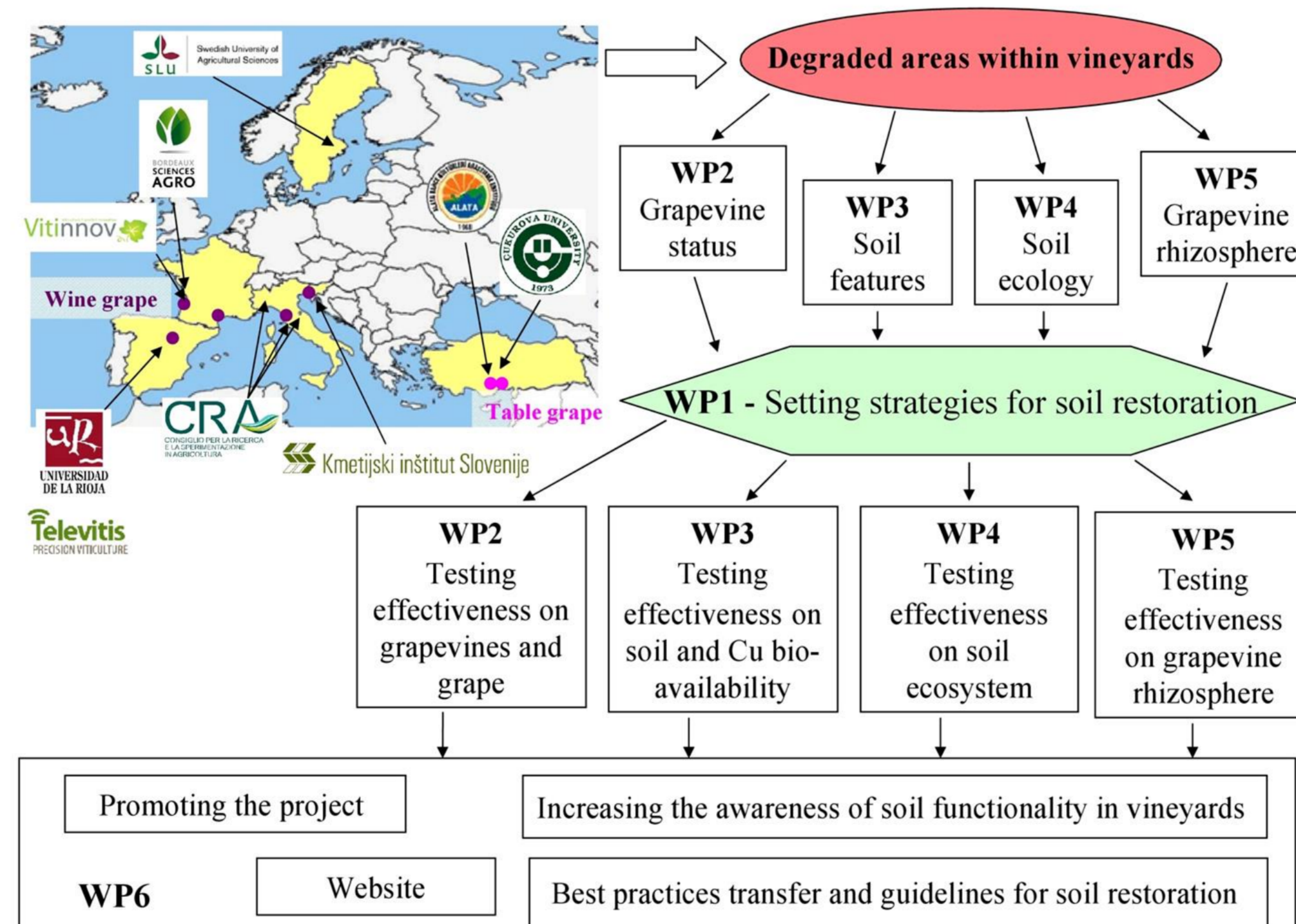


3. Cover crops and dry mulching



PROJECT STRUCTURE

- transnational, multidisciplinary
- 6 workpackages
- experiments in France, Italy, Slovenia, Spain, Sweden, Turkey



Coordinator, ITALY

CRA-ABP, Center for Agrobiolgy & Pedology

Partners

- Bordeaux Sciences Agro, FRANCE
- Vitinnov, FRANCE
- Universidad de la Rioja, SPAIN
- Çukurova University, Faculty of Agriculture, TURKEY
- Alata BKAI Horticultural Research station. TURKEY
- SLU, SWEDISH University of Agricultural Sciences
- KIS, Agricultural Institute of SLOVENIA

involving scientists from different disciplines (soil science, ecology, microbiology, grapevine physiology, viticulture, and biometry)

ACTIVITIES

- Assessing effects of strategies on grapevine health and soil quality
- Data inventories before, during and after applying strategies for 2–3 years
 - crop yield and quality of grapes
 - soil characterization, chemistry and hydrology
 - ecosystem characterization (organic matter breakdown, earthworms, hydrolytic enzyme activity, soil respiration, microbial biomass, etc.)
- Microbial communities in soils
- Ecological service providers, bacteria and fungi, in roots and rhizosphere

EXPECTED RESULTS

- Guidelines for restoring soil functionality
- Evaluation of strategies for reaching
 - optimal plant growth and grape yield and quality
 - optimal soil ecosystem services and their stability over years
 - optimal expressions of wine "terroir effects"
- Setting up protocols for analyses of ecosystems in European vineyards

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