

# Carbon sequestration and co-benefits: evaluating agroecological and regenerative practices for soil health, soil biodiversity, and pathogen protection in Vineyards and Kiwifruit (Vi.Ki. Project)

Susanna Debenedetti<sup>1</sup> \*, Matteo Mancini<sup>1</sup>, Elisa Decarli<sup>1</sup>, Francesca Tozzi<sup>2</sup>, Andrea Squartini<sup>3</sup>, Giuseppe Concheri<sup>3</sup>, Giorgia Liberati<sup>4</sup>

<sup>1</sup>Deafal (Delegazione Europea per l'Agricoltura Familiare in Asia, Africa e America Latina), Via Confalonieri 3/b, Milano, Italy

<sup>2</sup>Renewable Energy Consortium for Research and Demonstration (RE-CORD), Department of Industrial Engineering, University of Florence, Viale Morgagni 40, Firenze, Italy

<sup>3</sup>Department of Agronomy, Animals, Food, Natural Resources, and Environment (DAFNAE), University of Padova, Viale dell'Università 16, Legnaro, Padova, Italy

<sup>4</sup>Radici Connesse

\*s.debenedetti@deafal.org

VIKI

## THE VI.KI. PROJECT

Vi.Ki - Agroecology for the Rhizosphere of Grapevine and Kiwifruit

Quantifies the effects of advanced agroecological practices on vineyards and kiwifruit with a specific focus on promoting stable soil carbon sequestration through the strategic use of amendments

The primary goal is to develop and validate regenerative protocols that not only enhance soil health and biodiversity but also provide an effective strategy to mitigate the impact of severe diseases like Kiwifruit Vine Decline Syndrome and Grapevine Trunk Diseases, thereby significantly reducing chemical inputs

## DETAILS ON IMPLEMENTED CARBON FARMING PRACTICES



Il Pignetto farm | Vineyard  
45°28'32.5"N 10°49'12.6"E |  
Veneto, Italy

Michele Bianchi farm | Kiwifruit  
45°26'28"N 10°50'31"E |  
Veneto, Italy

m<sup>2</sup> 400 m<sup>2</sup> plots

The trials compare a traditional control (T1) with five innovative regenerative treatments (T2-T6) that involve a synergistic combination of: Carbon-Based Amendments (T2, T3, T5): compost (3 kg/m<sup>2</sup>) and biochar (0.2 t/plot, only first year) to promote amending effects and stable carbon sequestration (Figure 1, 2, 3)

Soil and Leaf Health Inocula (T3, T4, T6): compost tea applied to both the solid amendments (pre-application) and directly to the soil and leaves to boost beneficial microbial communities (Figure 4)

Cover Cropping/Seeding (T5, T6): overseeding of legume and grass mixes (e.g., *Festuca ovina*, *Trifolium repens*, *Medicago sativa*), often combined with amendments or biofertilizers (Figure 5)

Biofertilizers (T4, T6): use of cutting-edge diagnostic methods based on the DNA of the entire bacterial and fungal community to assess soil health, diseases prevention, and the characteristics of soil amendments, biofertilisers/biostimulants, and comparison of these results with optical microscopy based on the Soil Food Web School method in order to verify their consistency and possible intercalibration/validation (Figure 6)



FIGURE 1 - BIOCHAR DISTRIBUTED IN THE VINEYARD



FIGURE 3 - AMENDMENTS INCORPORATED INTO THE SOIL



FIGURE 5 - COVER CROPS IN KIWIFRUIT ORCHARDS



FIGURE 2 - BIOCHAR DISTRIBUTED IN THE KIWIFRUIT ORCHARDS



FIGURE 4 - COMPOST TEA DURING PRODUCTION



FIGURE 6 - BIOFERTILIZERS DURING PRODUCTION

## EXPECTED RESULTS AND CARBON FARMING IMPACT

The Vi.Ki. project will monitor the efficacy of the regenerative practices through:

- ✓ Economic and Environmental Quantification → Creation of a dashboard for impact assessment, including the quantification of sequestered carbon over time
- ✓ Advanced Soil Health Monitoring → Use of cutting-edge diagnostic methodologies based on DNA analysis of microorganisms to validate official bio-indicators for soil quality assessment and disease prevention
- ✓ Protocol Development → Dissemination of replicable agronomic protocols to increase agricultural sustainability and reduce reliance on chemical inputs



Scan the QR code to go to the project's web page and stay up to date on all activities!



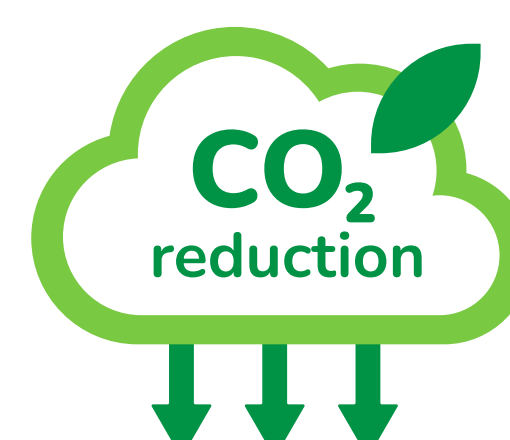
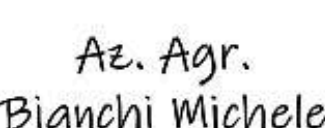
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REGIONE DEL VENETO



SVILUPPO RURALE VENETO 2023-2027



These activities directly contribute to advancing stable soil carbon sequestration and strengthening the resilience of perennial crop agrosystem