



UNIVERSITÀ
CATTOLICA
del Sacro Cuore

Thesis topics available in SVE for 2025-2026

Master of Science in Sustainable Viticulture and Enology



Prof. Stefano Poni

Via Emilia Parmense, 84
29121, Piacenza PC
Tel. +39 0523 599271
stefano.poni@unicatt.it

VITICULTURE

- Agro-voltaic on vineyards – Physiological assessment
- Agro-voltaic on vineyards – Agronomic assessment
- Calibration of new non destructive stem water potential sensors vs whole canopy gas exchange
- Novel cover cropping techniques to improve soil health and water stress resilience in vineyards
- Effects of temperature and phenology on carbohydrates translocation in *V. vinifera*.
- A “circular” management in the wine value chain
- Remote assessment of hail damage in vineyards.
- Remote assessment of frost damage in vineyards.
- Cooling effects on the variety Sauvignon blanc
- Cooling effects on the variety Barbera.
- Policlonal selection of old Barbera biotypes in the Monferrato district.
- Historical survey of the spread of viticulture in XVII e XVIII centuries in the Piacenza area: resources from Collegio Alberoni
- Validation of a new proxy device for monitoring canopy growth in vineyard
- Development and testing of a yield monitor for mechanical harvesters
- Mechanical selective harvesting
- Effects of winter cover crop termination on soil water balance in vineyard
- Innovative under the trellis cover crops to control weeds and minimize tillage and herbicide use in viticulture
- Novel strategies for protecting grapevines against spring frost
- Side netting as a polyfunctional tool to protect grapevines against climatic hazards (Malvasia di Candia aromatica)
- Side netting as a polyfunctional tool to protect grapevines against climatic hazards (Barbera)
- Manipulating technological ripening of cv. Ortrugo grapevines through kaolin-based foliar spray
- Side netting and kaolin spray to contrast abiotic stresses on grapevines
- Training and Testing of a robotic arm for spur winter pruning in vineyard
- Non destructive yield prediction in vineyards through smart viticulture tools
- Use of microbial and non-microbial biostimulants to improve grapevine performances under limiting conditions.
- Use of organic-based hydrogels at transplanting to improve vine water status and vineyard establishment
- Cross-tolerance in grapevines: Interactions between different abiotic stresses and vine physiology
- Understanding kaolin and particle-film technologies effects on grapevine canopies and fruit composition

ENOLOGY

- **Calcium stability in wines: proof of concept and analytical investigation.**
- **Automation 4.0 and machine learning in winemaking plants**
- **In-Winery application of a machine learning approach to winemaking plants**
- **Effect of the use of organic-based hydrogels in vineyard on the chemical-physical and aromatic characteristics of wine.**
- **Volatile Compound Release from Oak Chips in red wine: Combined Influence of wood species, Size, Time of Contact and type of wine.**
- **Development and validation of a gas chromatographic method (HS-SPME-GC x GC-MS) for the determination of volatile compounds in wine.**
- **Effect of pH and ethanol content and oak chips addition on the aroma profile of white wine during shelf-life.**



UNIVERSITÀ
CATTOLICA
del Sacro Cuore

VINEYARD SOIL AND WINE MICROBIOLOGY

- Compost microbial communities as a mean to reduce the pathogen load in pruning wood
- Microbial biostimulants to water stress in grapevine growing
- Microbial ecology in wine making
- Microbial ecology in beer making
- Studies on yeasts having malic degradation activities
- Screening of microbial communities associated to Vitis root systems according to different vineyard soil management
- Evaluation of fumaric acid metabolism of wine yeasts, during the alcoholic fermentation of grape juice and wine, through an integrated microbiological and metabolomic approach.
- Metagenomics assessment of the bacterial populations potentially involved in grapes acid rot
- Joint utilization of hydrogels and microbial biostimulants in grapevine production
- Novel biocontrol methods based on essential oils and beneficial microbes



UNIVERSITÀ
CATTOLICA
del Sacro Cuore

ENTHOMOLOGY

- **Trials on transmission of “Flavescence dorée” phytoplasma from Halyomorpha halys (brown marmorated stink bug) on broad-bean**
- **Interaction between Halyomorpha halys microbiome and gut bacteria to isolate pathogens useful for biological control**
- **Insecticides trials against Halyomorpha halys**
- **Monitoring of Halyomorpha halys in a vineyard environment**
- **Arthropod biodiversity in soil according to vineyard management**
- **Insecticides susceptibility of different populations of Scaphoideus titanus, Flavescence dorée phytoplasm**
- **Monitoring of leafhopper species involved in the spreading of phytoplasma diseases in vineyards**
- **New methods for the detection of the “Flavescence dorée” phytoplasma and its vector Scaphoideus titanus in vineyards**



UNIVERSITÀ
CATTOLICA
del Sacro Cuore

WINE MARKETING AND ECONOMICS

- **Selling wines online: a comparative analysis of e-commerce business models**
- **An analysis of the modern retailers' assortment performance in the wine category**
- **The effectiveness of price/non-price promotion causalities in the wine category**
- **Store Brands: opportunities and threats for wine producers**
- **Drivers of adoption for sustainable practices among wine producers**
- **Analysis of wine consumption and the role of certifications and/or innovations**



UNIVERSITÀ
CATTOLICA
del Sacro Cuore

PATHOLOGY

- **Innovative and sustainable strategies for Integrated Vineyard Management**
- **Integration of resistance inducers into sustainable vineyard protection: evaluation of basic substances Physical Mode of Action (PMoA) against *Plasmopara viticola***
- **Integration of natural compounds into sustainable vineyard protection: evaluation of essential oils Physical Mode of Action (PMoA) against *Plasmopara viticola***
- **Unravelling grape acid rots: the role of grape and vectors microbiome**
- **Modelling esca complex on grapevine**
- **Study of the interaction between genetically disease-resistant grape varieties and pathogen populations**
- **Metagenomics assessment of the bacterial populations potentially involved in grapes acid rot)**
- **Novel biocontrol methods based on essential oils and beneficial microbes**
- **Use and evaluation of natural compounds extracted from agricultural and industrial byproducts to contain *Aspergillus carbonarius* e/o *Botrytis cinerea* in grapes**
- **Decision Support Systems (DSS) to handle ochratoxins production in the vineyard**
- **Agents of secondary bunch rot in grapes**



UNIVERSITÀ
CATTOLICA
del Sacro Cuore

GENETICS

- **Molecular investigation of grapevine biodiversity**
- **Gene Expression analysis of grapevine plants under different canopy management**



UNIVERSITÀ
CATTOLICA
del Sacro Cuore



UNIVERSITÀ
CATTOLICA
del Sacro Cuore

Master of Science in
Sustainable Viticulture and Enology
2025-2026