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Thesis topics available in SVE for 2023-2024

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

- **Late Winter Pruning of Guyot-trained Chardonnay grapevines in Franciacorta.**
- **Assessing within-field variability of a Croatina vineyard located in Oltrepò Pavese.**
- **Vineyard mapping by proximal sensing: a comparison between summer vs winter acquisitions.**
- **Training and Testing of a robotic arm for spur winter pruning in vineyard**
- **Drought resilience improvement in vineyard ecosystems (Oltrepò Pavese district)**
- **Drought resilience improvement in vineyard ecosystems (Colli Piacentini district)**
- **Development of drought-resilient strategies for vineyard floor management in the Colli Piacentini area. (RESILVIGNA, activities 2021-2023)**
- **Using BIG-DATA and Machine Learning in the grape value chain**
- **Use of new water super-absorbent polymers (hydrogels) to improve grapevine drought tolerance**
- **Calibration of new non destructive stem water potential sensors vs whole canopy gas exchange**
- **Role of leaf proline in grapevine osmotic adjustments and in the prevention of ROS biosynthesis according to a progressive water deficit**
- **A “circular” management in the wine value chain**
- **Non-destructive yield estimation in vineyard**
- **Tackling within-vineyard variability by using different winter cover crops**
- **Assessing physiological performances of young grafted grapevines derived from different sorting categories at the nursery**



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ENOLOGY

- **Calcium stability in white wines: proof of concept and analytical investigation**
- **Automation 4.0 and machine learning in winemaking plants: prototypes for in-line controls**
- **Effects of chitosan addition on wine tartrate stability**
- **Beer production: insights about new styles, chemical analyses and sensory profiling**
- **Characterization of resistant grape varieties: multidisciplinary approach to grape and wine analysis**
- **Malvasia di Candia aromatica: impact of selective harvest on grape and wine aroma profile and validation of a related method of analysis**
- **Shelf-life assessment of Malvasia di Candia wines**
- **In-Winery application of a machine learning approach to winemaking plants**



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PATHOLOGY

- Innovative strategies for integrated vineyard protection
- Effectiveness of Decision Support Systems (DSS) in vineyard IPM
- Cover cropping as a tool to strengthen vineyard IPM
- Sanitation techniques against vineyard soil-borne or soil-transient pathogens
- Agents of secondary bunch rot in grapes
- Use and evaluation of resistance inducers in the vineyard
- Use and evaluation of bio-control agents in the vineyard
- Molecular assessment of overwintering inoculum in downy and powdery mildew
- Decision Support Systems (DSS) to handle ochratoxins production in the vineyard
- Use and evaluation of natural compounds extracted from agricultural and industrial by-products to contain *Aspergillus carbonarius* and/or *Botrytis cinerea* in grapes
- Basic substances for sustainable vineyard protection: evaluation of chitosan physical mode of action (PMoA) against *Plasmopara viticola*

- Use and evaluation of botanicals in the vineyard
- Fungicide resistance risk quantification and mapping: the case study of *Plasmopara viticola*
- Dynamic of *Aspergillus carbonarius* and ochratoxin A during grape drying

ENTOMOLOGY

- Development of traps to monitor the main vector of *Flavescenza dorata* phytoplasma, *Scaphoideus titanus*
- Study of the spatial-temporal distribution of the main vector of *Flavescenza dorata* phytoplasma, *Scaphoideus titanus* in vineyards



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SUSTAINABILITY and WINE MARKETING

- **Selling wines online: a comparative analysis of e-commerce business models**
- **An analysis of the modern retailers' assortment performance in the wine category**
- **Sustainability analyses of production and management processes within the wine value chain.**
- **Method to assess sustainability in wine production**

GENETICS

- **Genetic assessment of old Barbera clones as a tool for adaptation to climate change**



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MICROBIOLOGY

- **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**
- **Microbiological and enological analyses of XIX° Century ancient wines**
- **Screening of microbial communities associated to Vitis root systems according to different vineyard soil management**
- **Metagenomics assessment of the bacterial populations potentially involved in grapes acid rot**
- **Compost microbial communities as a mean to reduce the pathogen load in pruning wood**



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