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# Thesis topics available in SVE for 2022-2023

Master of Science in Sustainable Viticulture and Enology



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Prof. Stefano Poni

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# VITICULTURE

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- Late Winter Pruning of Guyot-trained Chardonnay grapevines in Franciacorta.
- Assessing within-field variability of a Croatina vineyard located in Oltrepò Pavese.
- Manual selective harvesting in vineyard. Development of a strategy aiming at identifying and managing within-field variability for product diversification and increased revenue.
- Mechanical selective harvesting in a Malvasia vineyard from Colli Piacentini.
- Reduction of copper use in viticulture through on-the-go adjusted canopy sprays depending on vigor variability.
- Assessment of spatial and temporal variability of a Barbera vineyard from Colli Piacentini.
- 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)
- In field calibration of new IoT sensors for continuous monitoring of grapevine water status.
- Whole-canopy gas exchange of Cabernet Sauvignon canopies as affected by the double cropping technique.
- Using BIG-DATA and Machine Learning in the grape value chain.
- Micro-climatic canopy environment after kaolin application and grapevine response to varying light intensity.
- Calibration of new non destructive stem water potential sensors vs whole canopy gas exchange.
- Early leaf removal to improve grapes suitability to post-harvest controlled dehydration and passito winemaking.
- A “circular” management in the wine value chain.



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# ENOLOGY

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- **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

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- 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 factors 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 byproducts to contain *Aspergillus carbonarius* e/o *Botrytis cinerea* in grapes.
- Basic substances for sustainable vineyard protection: evaluation of chitosan physical mode of action (PMoA) against *Plasmopara viticola*.

# ENTOMOLOGY

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- Trials on transmission of *Flavescenza dorata* phytoplasma from *Halyomorpha halys* (cimice asiatica) 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 an orchard environment.
- Arthropod biodiversity in soil according to vineyard management.



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# WINE MARKETING

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- **Selling wines online: a comparative analysis of e-commerce business models.**
- **An analysis of the modern retailers' assortment performance in the wine category.**

# GENETICS

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- **Molecular investigation of grapevine biodiversity.**
- **Genetic assessment of old Barbera clones as a tool for adaptation to climate change.**



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