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Thesis topics available in SVE for 2024-2025

Master of Science in Sustainable Viticulture and Enology



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VITICULTURE



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- **Kitosan applications as an elicitor for self-defence mechanisms against biotic stresses**
- **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.**
- **Selective mechanical harvesting in Barbera**
- **Temporary winter cover crop as a tool to control vegetative and yield variability in vineyards**
- **Manual selective harvesting in vineyard. Development of a strategy aiming at identifying and managing within-field variability for product diversification and increased revenue**
- **Reduction of copper use in viticulture through on-the-go adjusted canopy sprays depending on vigor variability.**
- **Vineyard mapping through proximal and proximity sensors**
- **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**
- **Innovative under the row cover crops to control weeds and minimize tillage in vineyards**
- **Non destructive yield prediction in vineyards through smart viticulture tools**
- **Multi-functional irrigation in vineyards**
- **Using BIG-DATA and Machine Learning in the grape value chain**
- **Agri-voltaic on vineyards**
- **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**
- **Assessment of frost and hail damages through UAV approaches in vineyards**
- **Effects of temperature and phenology on carbohydrates translocation in *V. vinifera*.**
- **Foliar non microbial biostimulants application to improve grapevine tolerance to water stress.**
- **Role of minor, local grapevine varieties within a global warming scenario.**
- **Use of microbial biostimulants to improve grape tolerance to water and nutritional stresses.**
- **Grapevine response to idrogel and other hyper-absorbent polymers.**
- **New cross-tolerance strategies in *Vitis vinifera* L.**
- **A “circular” management in the wine value chain**

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 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*.



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ENTHOMOLOGY

- **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**
- **Insecticides susceptibility of different populations of *scaphoideus titanus*, vector of *Flavescenza dorata***
- **Monitoring of leafhopper species involved in the spreading of phytoplasmas in vineyards**



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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**
- **Microbial biostimulants in grapevine growing**
- **Microbial ecology in wine making**
- **Studies on yeasts having malic degradation activities.**



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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**
- **The effectiveness of price/non-price promotion causalities in the wine category**
- **Store Brands: opportunities and threats for wine producers**

GENETICS

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



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