

# Optimizing Red Straw Wine Production: A Multi-Faceted Approach

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## State of the art

- ✓ **Grape withering** technique trace back to ancient times when it was used to create long-lasting wines [1].
- ✓ The intense water loss occurring post-harvest **concentrates sugars** leading to wines with **higher ethanol** [2].
- ✓ **Temperature, relative humidity and withering length** influence the amount of water released from grapes and hence their **weight loss** [3].
- ✓ Each **grape variety** may respond differently in terms of dehydration rate and **chemical-physical changes** in berries [4].
- ✓ Grape withering affects the content of **secondary metabolites**, such as phenols and aromas, due to concentration and degradation phenomena [4].

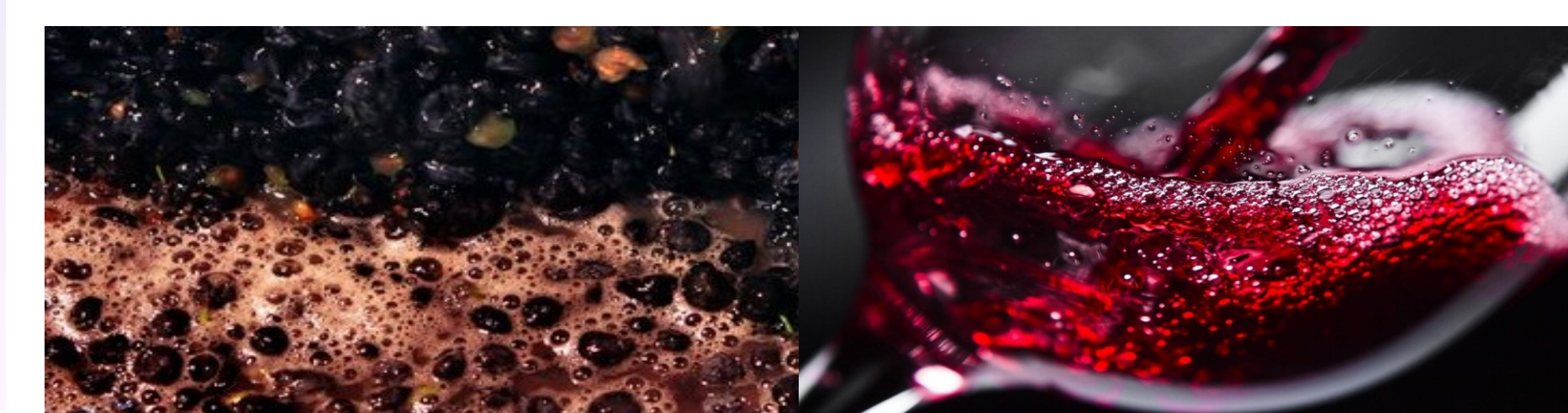
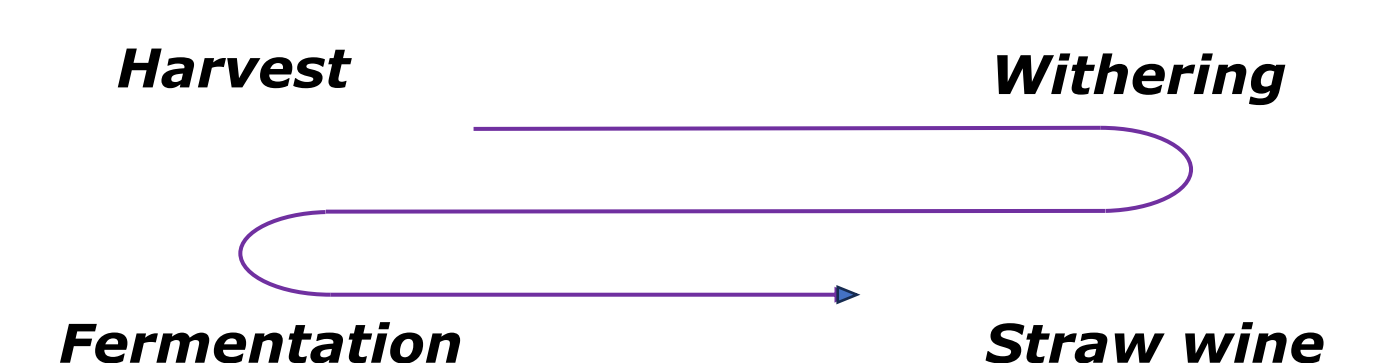
## Aims of the project

### General goal

To optimize the production of straw wine improving both the withering and the winemaking

### Specific objectives

- Characterization of commercial straw wine
- Evaluation of the withering process for different grape varieties
- Investigation of the impact of the harvest time and withering length
- Study of the impact of pre-fermentative steps
- Development of a predictive index for the aroma development from grape to wine



## Activities

## Expected Results

## Deliverables

### A1) Characterization of commercial straw wines (months 1 - 17)

- A1.1 – Insight wine phenolic composition
- A1.2 – Data analysis

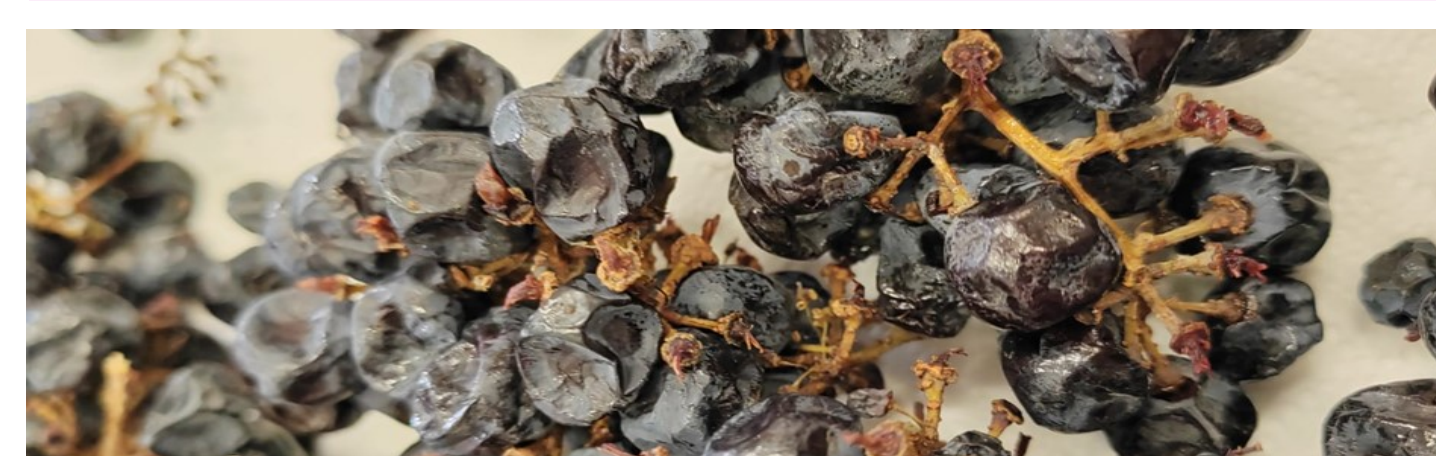
Evaluate the phenolic composition of different straw wines

- D1.1: Chemical composition of straw wines

### A2) Management of grape withering (months 1 - 7 ; 13 - 20)

- A2.1 – Monitor of withering for different grape varieties
- A2.2 – Setting of harvest and withering duration
- A2.3 – Exploitation of different pre-fermentative steps
- A2.4 – Fermentation management

Build up a methodology for the production of straw wines considering withering, pre-fermentative and fermentative operations.



- D2.1: Withering models for different grape varieties  
- D2.2: Identification of the most performing harvest date/withering length  
- D2.3: Winemaking protocol for the enhanced production of straw wines

### A3) Evaluation of the aroma development and prediction (months 1 - 24)

- A3.1 – Screening aroma precursors
- A3.2 – Standardized winemaking trials
- A3.3 – Screening of aromas
- A3.4 – Development of a potential aroma index

Develop a statistical-mathematic methodology for the prediction of aroma development through the winemaking process

- D3.1: Screening of aroma and aroma precursors  
- D3.2: Protocol for the determination of the potential aroma index

### A4) Bibliographic research, writing & editing (months 1 – 36)

- PhD thesis, scientific papers, oral and/or poster communications.

## References

- [1] Scienza (2006). Atlante dei vini passiti italiani. Grubaud.
- [2] Mencarelli & Tonutti (2013). Sweet, Reinforced and Fortified Wines: Grape Biochemistry, Technology and Vinification.
- [3] Sanmartin et al. (2021). Postharvest Water Loss of Wine Grape: When, What and Why. Metabolites.
- [4] Scalzini et al. (2021). Effect of withering process on the evolution of phenolic acids in winegrapes: A systematic review. Trends in Food Science & Technology.