

Project: Grape Washing in Winemaking: Evaluation of Performance, Risks, and Implementation Strategies

Candidates	:	
Duration	:	16 weeks – one semester
Report	:	12.12.2025, 11.59pm
Advisor	:	Fiorella Lucarini
Additional Advisors HES	:	Segura Jean-Manuel; Benoit Bach
Expert / Company	:	
Abbreviation	:	Grape-Wash
Key Words	:	Grape washing, Winemaking, wine quality, Contaminant removal

1. Description

As consumers demand for cleaner, more sustainable, and higher-quality wines increases, wineries are exploring the use of grape washing as a pre-fermentation step to reduce microbial load, pesticide residues, and environmental contaminants. However, the practice remains controversial due to its potential impact on grape integrity, native yeast populations, and final wine quality. This project will explore the scientific, technical, and practical aspects of grape washing through a combination of literature review, risk analysis, and critical evaluation of current industry practices. The team will evaluate the efficacy, environmental implications and relevance for winemaking. The final objective of the work is a comprehensive project proposal outlining possible experimental designs and implementation strategies for further studies or pilot-scale applications.

2. Objectives

- Evaluate the effectiveness of grape washing in removing contaminants such as pesticides, dust, and microbial populations from grape surfaces and propose a set of analytical techniques enabling the assessment of the removal efficiency of contaminants.
- Assess potential risks associated with grape washing, including the removal of beneficial native yeasts, berry damage, dilution of must, or introduction of water-borne contaminants and propose a set of analytical techniques enabling the assessment of the detrimental effects of grape washing.
- Analyze the impact of grape washing on the sensory and chemical properties of the final wine.
- Review and compare current industry practices and technologies used for grape washing in different winemaking regions.
- Propose implementation strategies tailored to different scales of production (small artisan to large-scale wineries), considering sustainability, cost-effectiveness, and regulatory compliance.
- Foster interdisciplinary collaboration by integrating perspectives and methodologies from chemistry (e.g., analytical techniques), enology (e.g., fermentation impact), and life sciences (e.g., microbiological dynamics).

3. Remarks

Templates for the report and additional information will be provided by the advisor.

A draft report must be submitted on 11.11.2025 and will be discussed during an online session on 18.11.2025.

On the due date of the report, the following documents have to be provided by the candidates:

- Report in electronic form (Word and PDF) to the advisor and co-advisors
- The report can be written in English, French or German and should be limited to 20 pages in length (excluding appendices).

4. Evaluation

The final grade of the module will take into account the report (40%), the defense (30%) and an individual interview (30%).

The report will be evaluated according to the following criteria:

	Very good	Good	Slightly insufficient	Significantly insufficient
Context and objectives	Permanent vision of the project context, mastery of all objectives	Sufficient understanding of the context and main objectives of the project, with occasional refocusing required	Insufficient understanding of context and objectives, regular refocusing necessary	Constant reframing of context and objectives or ignoring context and objectives
State of the art	Relevant selection of existing resources, clear summary, clear positioning of the project	Selection of relevant resources, partial summary, positioning of the project presented but not very in-depth	Selection of irrelevant resources, unclear or non-existent project summary and positioning	Selection of irrelevant resources or missing state of the art
Research methodology	Appropriate and well-described research methods. The innovation sought will enable proven advances to be made	The research methods have minor shortcomings which impact the clarity of the research proposal. By large, the innovation actions will allow to fulfill the goals of the project.	The research methods have major shortcomings which significantly impact the clarity of the research proposal. By large, relevant parts of the proposal objectives will not be fulfilled.	Research methods are inappropriate or incomprehensible. The innovation sought will not lead to proven advances
Planification	Tasks and deliverables broken down and planned in a relevant and autonomous manner, realistic planning including resources and costs	Tasks and deliverables cut out and planned in a relevant way after a few modifications	Numerous corrections needed to arrive at a definition of tasks and deliverables and a workable schedule	Unworkable breakdown and planning despite multiple iterations
Clarity and legibility	Clean, concise writing, precise vocabulary, high-quality illustrations described in the text, attractive layout	Acceptable writing (a few spelling mistakes), generally appropriate vocabulary, mostly legible illustrations	Several spelling mistakes per page, often insufficient vocabulary, poor quality or inappropriate illustrations	Spellchecker not used, inappropriate vocabulary, poor quality/inappropriate illustrations, sloppy layout

The defense will be evaluated according to the following criteria:

	Very good	Good	Slightly insufficient	Significantly insufficient
Structured presentation and ability to summarise (15%)	Introduction of context, clear structure, clear, well-argued summary	Adequate structure, some awkward transitions, partial or unargued summary	Unconvincing structure, missing transitions, unconvincing synthesis	Context not introduced, lack of main theme and summary
Presentation materials (15%)	Clean, error-free and legible material, good linkage between presentation and material content	Appropriate support material, usually error-free and legible, used for the presentation	Loaded and illegible media or no control over media content	Overloaded and illegible media and no control over media content
Posture and oral expression (15%)	Open posture, captures the listener's attention, good elocution, appropriate and specific vocabulary	Open posture, lack of dynamism, adequate elocution, mostly appropriate vocabulary	Closed posture, limited contact with the public, limited and/or inappropriate vocabulary, poorly comprehensible oral expression	Closed posture with no contact with the audience, incomprehensible or inaudible speech
Technical depth of the presentation (15%)	Fully convinced of the quality and depth of the work carried out and of its original contribution to TM	Impression that the work carried out has an appropriate technical depth for a TM	The presentation does not allow us to assess the quality and depth of the work carried out	Impression of surface work, no new technical elements linked to TM, the presentation is a smokescreen
Presentation management (15%)	Time limit respected, prepared slides were all dealt with in the same level of detail, self-assessment included in 30 min.	Slight overrun (3 min max) or necessary acceleration during the presentation with a different level of detail for the last slides, self-assessment included in the 33 min.	Overrun of more than 3 minutes or necessary acceleration with more than 3 slides not dealt with or no self-assessment	Overrun of more than 6 minutes or necessary acceleration with more than 6 slides that are not processed or no reaction to the supervisor's warning.
Interacting with listeners and answering questions (25%)	Constructive attitude in discussions, clear answers in line with the questions asked	Constructive attitude in the discussion, imprecise answers in line with the questions	Lack of commitment to the discussion, answers not in phase with the questions	Defensive and/or negative attitude in the exchange, irrelevant responses (avoidance, deflection)

Plagiarism in any form is not accepted. Any case of plagiarism or professional misconduct will be prosecuted following the rules of the HES-SO.

XX.XX.2025, Sion

Advisor	Urban Frey Head of Master HES-SO MLS
Candidate	Candidate
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