

## The symptomatic response of grapevines to downy mildew (*Plasmopara viticola*) infection

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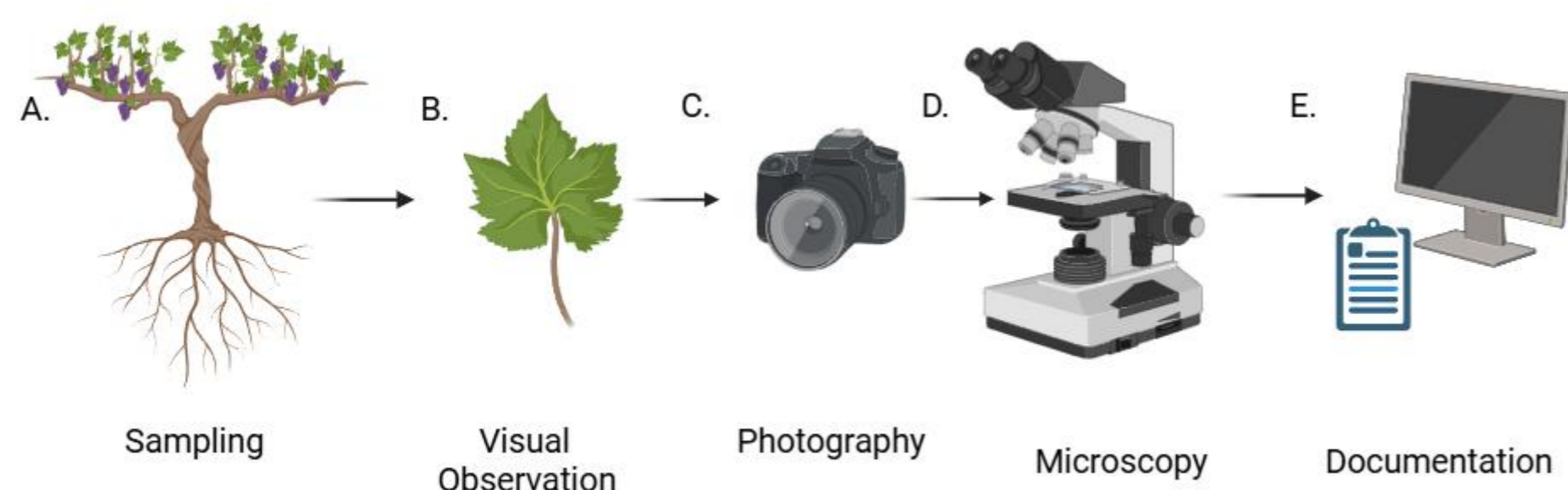
### INTRODUCTION & AIM

Downy mildew (*Plasmopara viticola*) is one of the most widespread fungal diseases affecting grapevine health and berry quality. Understanding the symptomatic response of grapevines is crucial for the development of resistant cultivars and sustainable vineyard management practices.

The present study aims to describe the phenotypic and microscopic symptoms associated with downy mildew (*Plasmopara viticola*) infection in *Vitis vinifera* cultivars Muscat Ottonel and Chasselas, cultivated in vineyards in eastern Romania, and to elucidate the differential susceptibility of these cultivars to the pathogen.

### METHOD

Observations were systematically conducted during the active vegetative stages of both leaves and berries. Disease symptoms were meticulously documented through direct visual examination, high-resolution photography, and microscopic analysis, enabling the confirmation of *Plasmopara viticola* infection through the detection of mycelial networks and characteristic sporangia.

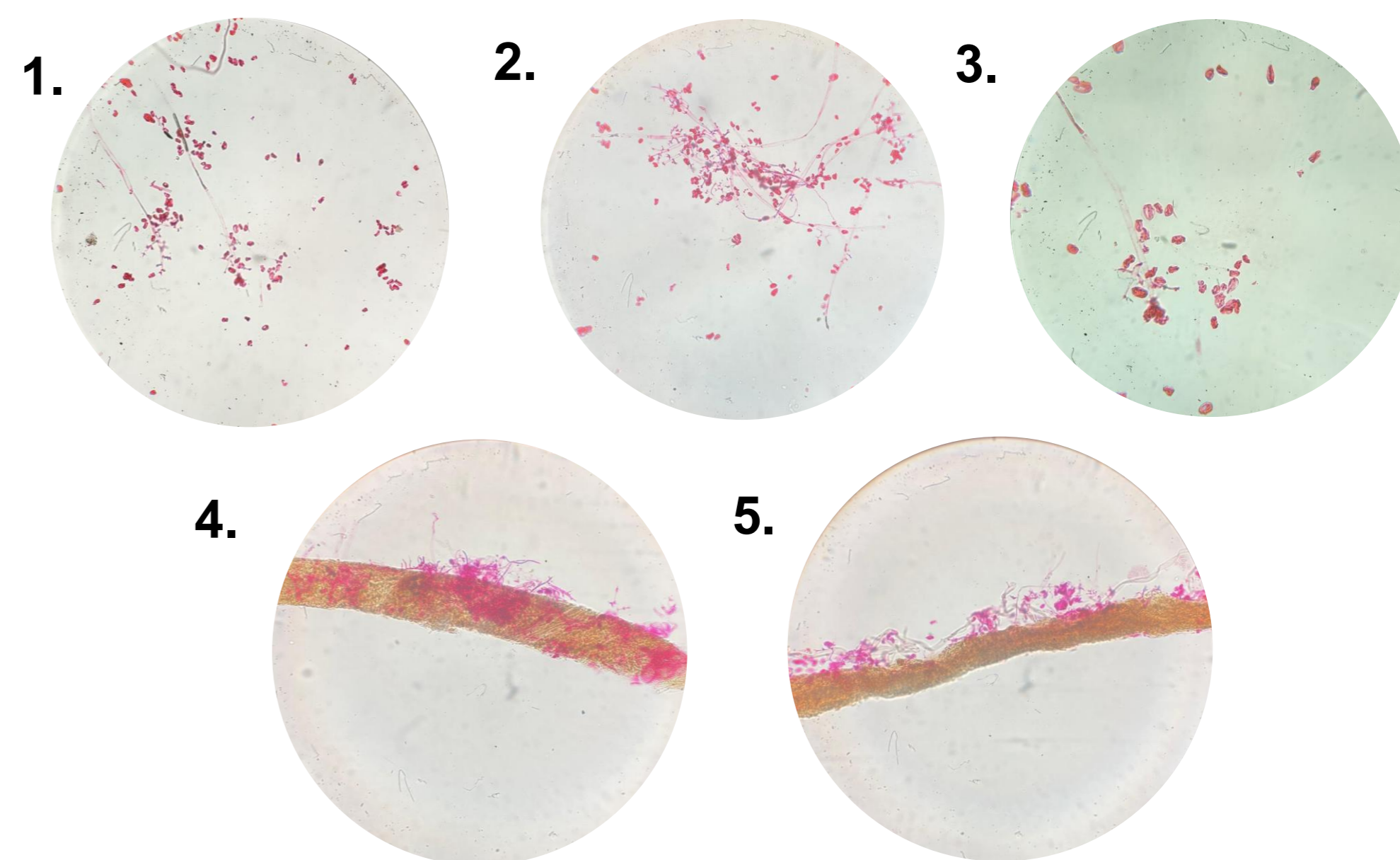


**Figure 1.** Methodological Steps for Downy Mildew Observation:

- Leaves and young shoots were collected from Muscat Ottonel and Chasselas cultivars in eastern Romania.
- Visual Observation: Symptom inspection of upper and lower leaf surfaces.
- Photography: Canon PowerShot A620 camera used to capture symptomatic features.
- Microscopy: Novex FL-100 LED microscope used to confirm mycelium and sporangia.
- Documentation: Observations and images recorded for qualitative analysis.

### RESULTS & DISCUSSION

The first visible signs of downy mildew infection appeared as small, pale yellow spots on the upper surfaces of leaves, typically observed during the early stages of vegetative growth. Within a few days, these spots expanded in size and intensity, while the undersides of the affected leaves developed a dense, white, downy mycelium characteristic of *Plasmopara viticola*. Microscopic analysis confirmed the presence of abundant mycelium and sporangia, validating the visual diagnosis. As the infection progressed, young shoots began to show signs of chlorosis and necrotic lesions, and berries developed discoloration and softening, indicating the systemic impact of the pathogen. Notably, Muscat Ottonel exhibited more pronounced leaf chlorosis and extensive mycelial growth, while Chasselas showed slower symptom development and less severe leaf damage, highlighting differences in susceptibility between the two cultivars. These observations indicate that disease progression is both rapid and variable, depending on cultivar characteristics and the stage of plant development.



**Figure 2.**

- Sporangiophores and sporangia of *Plasmopara viticola* observed at 10x objective.
- Sporangiophores and sporangia of *Plasmopara viticola* observed at 20x objective.
- Sporangiophores and sporangia of *Plasmopara viticola* observed at 40x objective.
- (5) Vine leaf tissue infected with *Plasmopara viticola*, showing sporangiophores, observed at 20x objective.

### CONCLUSION

Microscopic and visual observations confirmed the presence of *Plasmopara viticola* on both Muscat Ottonel and Chasselas grapevine cultivars from eastern Romania. Initial yellow spots on the upper leaf surfaces progressed to white mycelial growth and the formation of sporangiophores bearing characteristic sporangia on the lower surfaces. Differences in symptom severity between the two cultivars indicate variability in susceptibility. These findings provide valuable insights into host–pathogen interactions and can guide the selection of resistant cultivars and the development of sustainable vineyard management strategies.

### REFERENCES

- Dagostin, S., Schärer, H. J., Pertot, I., & Tamm, L. (2011). Are there alternatives to copper for controlling grapevine downy mildew in organic viticulture?. *Crop Protection*, 30(7), 776–788.
- Gessler, C., Pertot, I., & Perazzolli, M. (2011). *Plasmopara viticola*: a review of knowledge on downy mildew of grapevine and effective disease management. *Phytopathologia Mediterranea*, 50(1), 3–44.