

PRACTICE ABSTRACT - N°4**Improving our knowledge regarding grapevine genetic resources and pathogen resistance**

European viticulture is currently facing the imperative to adapt to climate change while concurrently mitigating its environmental impact. *Vitis vinifera* is particularly susceptible to biotic stresses, such as Downy Mildew (*Plasmopara viticola*) and Powdery Mildew (*Erysiphe necator*). These diseases are among the most destructive and prevalent across European vineyards, leading to yield losses and extensive fungicide applications. Furthermore, increasing temperatures and changing precipitation patterns may further affect the incidence and severity of these diseases, presenting new challenges for grape growers. In response, the SHIELD4GRAPE project aims to enhance the long-term sustainability and resilience of the European grape sector. It focuses on the identification, conservation, and use of grapevine genetic resources, emphasizing the screening of traditional and underutilized grapevine accessions for resistance to mildew diseases. Five partner countries conducted harmonized screenings using standardized OIV descriptors for DM (OIV-452) and PM (OIV-455). In total, 163 accessions, including minor or neglected genotypes, somaclones,

European germplasm collections and crossing hybrids, were screened in 2024. Among the top-performing genotypes for DM (Resistance Score ≥ 7) in each country were C.19 (Portugal), Morate (Spain), Mandilaria (Greece), Kacici (Hungary), and Slarina (Italy). For PM, the top performers were C.19 (Portugal), Albana (Spain), Limniona (Greece), Kacici (Hungary), and Vuillermin (Italy). Several genotypes demonstrated dual tolerance to both DM and PM (score ≥ 7 in both traits), a particularly valuable trait for reducing pesticide reliance. The identified genotypes are associated to wine regions of each country, allowing for their use into breeding pipelines with minimal impact in quality of wine commercialized, a concern often associated with non-*vinifera* resistance sources.

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PROJECT KEYWORDS

Pest/disease control in plants

Genetic resources

Outdoor horticulture and woody crops (incl. Viticulture, olives, ornamentals)

Biodiversity and nature

AKIS, incl. Advice, training, on-farm demo, interactive innovation projects

