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French Vineyards Battle Downy Mildew Amid Climate Change Challenges

Innovative DNA technology and coordinated efforts aim to protect harvests as warming climate increases fungal disease outbreaks in vineyards.

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The wine industry is actively seeking new solutions to combat downy mildew, a significant challenge exacerbated by climate change. In 2024, record rainfall across French vineyards has fueled the spread of this fungal disease, severely affecting harvest volumes. Various stakeholders, including institutes, researchers, and biologists, are exploring strategies to mitigate its impact and protect vineyards. The warming

climate is expected to increase mildew outbreaks, prompting urgent action.

Jérémie Brusini, a biologist and founder of Biology As A Solution (Baas) in Martillac, Gironde, is among those developing innovative methods to anticipate the disease's spread. His company uses DNA technology to combat fungal diseases like downy mildew. "We've developed spore traps to detect mildew presence early, before symptoms appear," Brusini explains. This early detection allows for timely treatment, preventing the disease from taking hold. "Treating spores before they develop stops mildew from establishing in our vineyards," he adds. Baas collects and analyzes these traps twice a week, sharing results with winemakers via an app. This system helps identify infection peaks from March to late July.

Brusini highlights another issue: excessive treatment leads to resistance against phytosanitary products. Baas identifies less effective products due to resistant variants in vineyards. "We help winemakers treat more effectively and less frequently," Brusini notes. Christine Spinner, director of Château Grand-Puy-Lacoste in Pauillac and a Baas client, agrees: "It's a reliable system and decision-making tool. It helps us understand and stay ahead."

Currently, Baas serves 21 clients in Gironde, ten in Gers, and five in Burgundy and Champagne. Local trials are also underway. The Bordeaux Wine Council (CIVB), in collaboration with the French Vine Institute (IFV), the Gironde Chamber of Agriculture, Agrobio, and organic winemakers in Nouvelle-Aquitaine, launched a mildew plan in 2022. This coordinated approach involves research, experimentation, and knowledge sharing. Camille Errecart, vineyard protection officer for the Gironde Chamber of Agriculture, oversees the Alt'Fongi III Biosolutions project. "We conduct trials to obtain local, independent references on existing or soon-to-be-released products," she says.

The project integrates biosolutions and biostimulants to assess their effectiveness against fungal diseases. A call for applications was made to test non-approved phytosanitary products. These tests occur on micro-plots, not in vineyards. "It's experimental, to have local references and results when they hit the market," Errecart explains. Twelve products were tested this year.

Copper remains essential in combating mildew. "We also work in production conditions, directly with partner winemakers, using approved biocontrols like sweet orange essential oil and potassium bicarbonates," Errecart continues. A collective of ten winemakers conducts their own trials with biosolutions, organizing meetings to share findings. The Vignerons Bio Nouvelle-Aquitaine union manages large-scale trials to test copper's effectiveness with or without biosolutions. "We're developing a research network. Many domains conduct copper and mildew trials, but results often stay within the estates. We aim to share and disseminate findings," says Anne Hubert, mission officer for Vignerons Bio Nouvelle-Aquitaine.

The union gathered twenty domains in 2024 to conduct parcel trials. "The pressure is intense, and resources are scarce. One thing is clear: copper remains indispensable in fighting mildew," Hubert concludes.