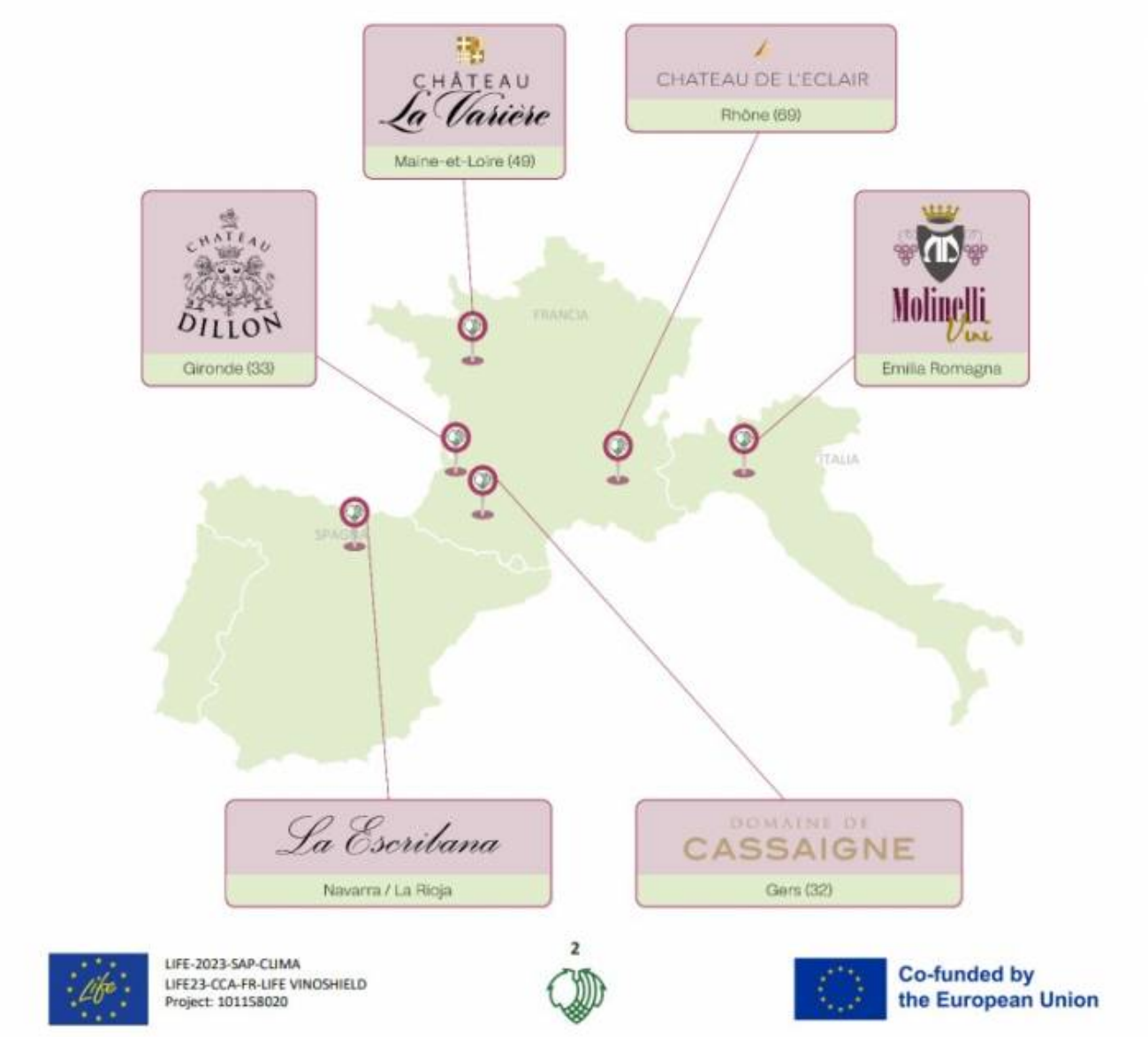
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Protective nets installed in European vineyards to combat climate risks and safeguard grape production

Field trials in Spain, France, and Italy test new technology aimed at reducing weather-related damage and chemical use in viticulture

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The European project LIFE VinoShield has begun installing protective textile nets in vineyards across Spain, France, and Italy to address the growing risks posed by extreme weather. Between February and March 2025, the first installations were completed in several key wine regions, marking a significant step in the project's strategy to safeguard viticulture from climate change.

The nets are designed to shield grapevines from spring frosts, hail, excessive sunlight, and heavy rainfall. These weather events have increasingly threatened both grape production and quality in recent years. Two types of nets are currently being tested: one specialized for frost and hail protection, and another multifunctional net that also helps prevent diseases, reduces exposure to intense solar radiation, and limits humidity. By controlling humidity, the nets can help reduce the need for chemical plant

protection products.

Field trials are underway at six representative vineyards: La Escribana in La Rioja (Spain), Molinelli Vini in Ziano Piacentino (Italy), and several sites in France including Château Dillon, Domaine de Cassaigne, Château La Varière, and Château de l’Éclair. Each vineyard has 600 meters of netting installed along alternating rows. This setup allows researchers to compare protected vines with unprotected control rows under similar conditions.

To monitor the impact of these nets, four of the six sites have been equipped with weather stations and sensors. These devices measure temperature, humidity, solar radiation, wind speed and direction both under the nets and in control areas. The data collected will be analyzed throughout the year to assess how the nets affect microclimate conditions, vine growth, plant health, and grape quality.

LIFE VinoShield is backed by a budget of 4.1 million euros and involves partners from France, Italy, Spain, and Belgium. The project aims to protect 16,500 hectares of vineyards by 2032. Organizers hope to reduce climate-related damage from 30 percent to just 5 percent across participating vineyards. Another goal is to encourage adoption of this technology by 2,750 European winegrowers through a sustainable business model.

Since its launch in September 2024, LIFE VinoShield has made progress on several fronts. The consortium has established a clear data management plan and an engagement strategy for stakeholders such as suppliers, growers, and local actors. Preparations for field trials included logistical planning and scientific groundwork. The project also launched a dedicated website to share updates and results with the public.

The current phase focuses on summer protection using shade and anti-hail nets. The experimental design at each site includes four different configurations distributed over twelve contiguous rows per vineyard. Control rows without nets are included at every location to provide accurate comparisons.

The project’s scientific monitoring will continue throughout the year as researchers gather data on how these innovative nets influence vineyard conditions. By combining new technology with rigorous field testing across diverse European wine regions, LIFE

VinoShield seeks to offer practical solutions for growers facing increasingly unpredictable weather patterns.