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Spain's Castilla-La Mancha launches a three-year study on drought-resistant vineyard rootstocks

Researchers will evaluate tempranillo and macabeo vines under heat and water stress to guide planting decisions in a key wine region

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The Castilla-La Mancha regional government said on Monday, November 16, that a new three-year research project will test how to make vineyards more resistant to drought and heat, two pressures that are growing across one of Spain’s most important wine-producing regions.

The project, called RESILVIÑA, was presented at the Regional Institute for Agri-Food and Forestry Research and Development, known as IRIAF, in Tomelloso, in the province of Ciudad Real. According to the regional government, the initiative will run for 36 months and will study how the tempranillo and macabeo grape varieties perform when grafted onto different rootstocks, with the goal of identifying combinations that better withstand water stress and high temperatures.

The work is aimed at one of the central problems facing vineyards in southern Europe: how to maintain production and grape quality as rainfall becomes less reliable and heat events become more frequent. In practical terms, the trials will compare different vine and rootstock combinations in the field and evaluate both their agronomic response and their enological performance, a measure that includes how grapes behave for winemaking.

If the project produces clear results, growers could gain new criteria for choosing planting material under harsher climate conditions. That could matter beyond farm management. For the wine business, and potentially for parts of the broader beverage sector that depend on stable grape supply and consistent fruit quality, better adaptation to water scarcity and heat could help reduce a structural risk to future production.

The regional government said the research will lead to technical guides and predictive models intended to support growers’ decisions. Those tools are expected to help winegrowers select rootstocks suited to different local conditions and improve long-term vineyard resilience in Castilla-La Mancha.

Five entities are taking part in the project: Virgen de las Viñas; the Mancha Occidental II groundwater users association; the Mancha Norte rural development group; IRIAF; and the University of Castilla-La Mancha, or UCLM. The mix of participants brings together growers, water managers and research institutions, reflecting the project’s focus on

both production and resource constraints.

During the presentation, regional Agriculture, Livestock and Rural Development Minister Julián Martínez Lizán described the wine sector as a major part of Castilla-La Mancha's economy and identity. According to the regional government, he said the sector accounts for 5% of the region's gross domestic product and generates more than 2 billion euros a year.

Those figures help explain why adaptation research is getting public backing. Castilla-La Mancha is one of Europe's largest vineyard areas, and its producers are exposed to the combined effects of lower water availability, rising temperatures and pressure to keep vineyards profitable. Rootstock selection is one of the tools growers can use because the root system can influence how vines cope with drought, absorb nutrients and maintain performance under stress.

The government said RESILVIÑA is part of a wider innovation program built around so-called operational groups, a framework designed to connect farmers, companies, cooperatives, universities and research centers on applied projects. In Castilla-La Mancha, 42 innovation projects have been approved through that system, with close to 10 million euros in aid, according to the regional administration.

Of those 42 projects, 14 are in agriculture, 15 in livestock and 13 in the agri-food sector, the government said. UCLM is involved in 26 of them and IRIAF in 12, a level of participation the administration said strengthens the transfer of research into practical use. Other institutions involved across the broader innovation portfolio include the Provincial Agronomic Technical Institute, the Castilla-La Mancha industrial technology center ITECAM, the University of Córdoba, the University of Alcalá, the Polytechnic University of Madrid and the Mushroom Research, Experimentation and Services Center.

The regional government presented RESILVIÑA as part of the European Innovation Partnership for Agricultural Productivity and Sustainability, known as EIP-Agri, which supports projects intended to solve specific problems in farming and food production. In this case, the problem is clear: how to keep vineyards productive as climate conditions become tougher.

For growers, the significance of the project will depend on whether the field trials produce recommendations that can be applied at commercial scale. Tempranillo is one of Spain’s most widely planted red grapes, and macabeo is important for white wines and for some sparkling production. Any evidence that particular rootstocks improve survival, yields or grape balance under drought and heat could influence planting decisions in new vineyards and, over time, replanting strategies in existing ones.

The project also links viticulture more directly to water management. One of the participating organizations represents users of the Mancha Occidental II groundwater body, an area where pressure on water resources has long been a critical issue. That makes the project not only a vineyard study, but also part of a broader effort to align agricultural production with tighter environmental limits.

Because the announcement came from the regional government, many of the project’s eventual results remain to be demonstrated. But the launch shows where public and industry attention is moving: toward adaptation measures that can be tested in the field, translated into technical advice and used by growers facing a drier and hotter future.