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Sicily's fight for ecological and economic survival

University of Milan study identifies drought-resistant native grape varieties

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Sicily, with its breathtaking landscapes and ancient winemaking traditions, is at the forefront of the battle against climate change. Rising temperatures and increasing droughts are placing immense pressure on the island's vineyards, which are a vital economic, cultural, and social resource. In recent years, extreme weather events have

made it harder for Sicilian producers to maintain the quality of their wines, while grape yields have frequently declined.

Despite the region's typically arid climate, which naturally reduces the need for chemical treatments by curbing pests, the sharp decline in winter and spring rainfall has severely diminished water reserves. This creates challenges that are expected to intensify. To address these issues, over 70 native grape varieties—developed over centuries to adapt to local conditions—are being studied in collaboration with the University of Milan to identify the most drought-resistant strains capable of withstanding global warming.

These topics were central to discussions at the "Sustainable Interactions" Symposium held on October 29 in Palermo, organized by the SOStain Sicilia Foundation. Experts from diverse disciplines gathered to share best practices for safeguarding the environment, society, and the economy. Attendees included wine producers, public officials, academics, environmental advocates, and volunteers, all confronting the impact of unsustainable development models on communities and biodiversity.

The SOStain Sicilia Foundation, created by the Sicily DOC Consortium and Assovini Sicilia, is made up of 44 wineries, 32 of which are already certified under the SOStain protocol. These wineries, managing a total of 6,000 hectares and producing over 21 million bottles annually, have voluntarily adopted practices to reduce their ecological impact. These measures include sustainable vineyard management, energy-efficient winery operations, and the use of eco-friendly materials, such as lighter wine bottles. Under the SOStain guidelines, producers are also required to adhere to the Ministry of the Environment's VIVA protocol, which mandates the monitoring of carbon and water footprints and residual pesticides in their wines. Certification is granted after verification by accredited entities.

The symposium underscored the importance of biodiversity protection, emphasizing the adoption of sustainable practices that support the communities and ecosystems where wineries operate. Alberto Tasca, Giuseppe Bursi, Letizia Russo, Arianna Occhipinti, and Alessio Planeta—members of SOStain's board and leading figures in Sicilian winemaking—highlighted the initiative's success in promoting a new business

philosophy grounded in sustainability. They stressed the potential for Sicily to serve as a model for a socio-economic framework that prioritizes environmental stewardship.

One of the critical strategies discussed was the precise measurement of wine production's environmental impact. Lucrezia Lamastra, president of SOStain's Scientific Committee, introduced the foundation's certification project, which focuses on reducing ecological footprints through practices like calculating carbon and water usage. Reducing bottle weight, for example, has been a significant step toward lowering energy consumption and CO2 emissions.

Innovative methods such as the use of biochar were also highlighted. Lucio Brancadoro, a viticulture professor at the University of Milan, explained how biochar, derived from vineyard pruning waste, can sequester carbon, enhance soil fertility, and improve water retention. Similarly, artificial intelligence is being employed to optimize resource management. Predictive algorithms, as explained by Giulia Baccarin of MIPU Predictive Hub, can reduce water use by up to 35% and provide early warnings about extreme weather, allowing producers to mitigate crop damage effectively.

In Sicily, where the water distribution system loses up to 50% of its supply—compared to the national average of 42%—these technological advancements are particularly critical. The symposium also explored circular economy initiatives, including producing recycled glass bottles locally in collaboration with O-I Glass, Sarco, and 180 Sicilian municipalities.

Hosted by television presenter Federico Quaranta, the event also showcased partnerships advancing sustainability. These include collaborations with O-I Glass for lightweight, locally produced bottles; Amorim Cork for cork recycling; the Allianz Umana Mente Foundation for social inclusion programs; and IRFIS for financing sustainable businesses. The efforts of SOStain Sicilia and its partners demonstrate the potential for a more sustainable future rooted in innovation and respect for the environment.