

Fighting grapevine trunk diseases

Grapevine trunk diseases (GTDs) are among the most harmful diseases that affect grapevine cultivation. These diseases affect woody parts of the grapevine, resulting in reduced vigour, yield loss and consequently a reduction in wine production and quality. In some cases, GTDs may even cause an early and sudden death of the vine, posing a major threat to the sustainability of the wine-growing sector. In all wine-producing countries there is a growing concern regarding this problem. The EVID Operational Group, in the Spanish region of Galicia, is working on an innovative practice using the application of a fungal species during pruning to combat GTDs.



Search for innovative practices to combat GTDs

Esca, *Eutypa dieback* and *Botryosphaeria dieback* are the main GTDs affecting vineyards worldwide. There is a lack of effective control measures and so a solution is urgently needed. In Galicia, Spain, GTDs are currently considered a serious problem. The wine sector is very important in this region both socially and economically. The EVID Operational Group is working hard to assess an innovative technique to efficiently fight GTDs. The consortium includes a technology and knowledge transfer office, research partners and winegrowers to ensure a good mix of perspectives so as to find truly practical solutions: the Galician Enterprise University Foundation (FEUGA), the University of Santiago de Compostela, the Godeval Winery and the Galician Viticulture and Oenology Station (AGACAL-EVEGA).



Trichoderma fungi as a biological control agent

Lucía Lloret, coordinates this Operational Group on behalf of FEUGA. This entity is also in charge of implementing the dissemination plan to maximise the impact of the Operational Group's results. She tells us: "Some of the EVID partners already participated in the European project WINETWORK. This thematic network identified and transferred to the sector a range of GTD innovative control practices following the multi-actor approach methodology implemented by FEUGA. One of their conclusions was that the antagonistic activity of *Trichoderma* fungal species has a preventing effect in the protection of pruning wounds. These wounds are the most common entry point for GTDs in adult plants and the fungi have the capability to suppress or delay growth or activity of the GTDs pathogenic agents.

However, the effectiveness of these fungi depends on several factors which limit their capacity to colonise the grapevine woody parts from the wound inwards. These factors include mode of *Trichoderma* application, time gap between pruning and application, weather and

environmental conditions. The feasibility of *Trichoderma* spp. as biological control agents has been tested in depth in vineyards in recent years. Currently, several commercial products based on *Trichoderma* are already available in the market (but not registered in all the EU countries)."

Innovative technique: wooden studs inoculated with *Trichoderma*

"In this Operational Group, we want to test the antagonistic activity of *Trichoderma* fungal species, applying in pruning wounds as usual, but also through its inoculation in the basis of the trunk. The aim is to demonstrate the efficiency of this innovative practice. The test field for our Operational Group is located at the Godeval Winery in Xagoaza, Galicia. The idea is to insert wooden studs inoculated with *Trichoderma* spp. in plants with an age of 17 and 27 years", says Lucía.

One of the reasons The Godeval Winery is participating in the Operational Group is because it was identified by WINETWORK as one of the end-users who was putting into practice an innovative technique to control GTDs. They have previous experience of the novel technique to be further studied within the Operational Group. José Luis Bartolomé from the Godeval Winery tells us: "The inoculation of these fungi by wooden studs sounded a very promising technique for us. Due to the fact that this technique was earlier tested in our winery and because of the experience that we already had, it was a logical choice to continue this research in our winery. When it comes to the results, we expect important economic benefits because of the reduction of the negative impacts of GTDs."



Expected impacts

Further studies are needed to validate this innovative technique under controlled conditions. Lucía tells: "Also a working procedure needs to be defined, as well as a comparison with other GTDs control practices such as pruning wound protection by using wound sealants (mastics) or another formulation based on *Trichoderma* spp. or commercial fungicides. We are hoping that this project will enable us to develop rigorous working protocols for winegrowers and technicians to use the *Trichoderma* method. In order to achieve this, we will disseminate the results, not only to the wineries and winegrowers, but also to consultants, research centres, policy makers and local phytosanitary services".

"The results will be disseminated among the main actors in Galicia region, but also at national and European level thanks to the wide network FEUGA has in the wine-growing sector as result of the participation in various relevant related projects" Says Lucía.

The project is due to come to a close at the end of 2019.

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Thematic network WINETWORK: www.winetwork.eu