Early diagnostic of the pinewood nematode based on new technological advancements in detection of volatiles

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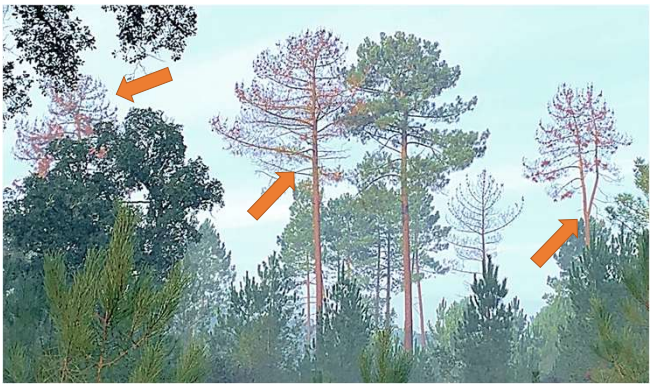
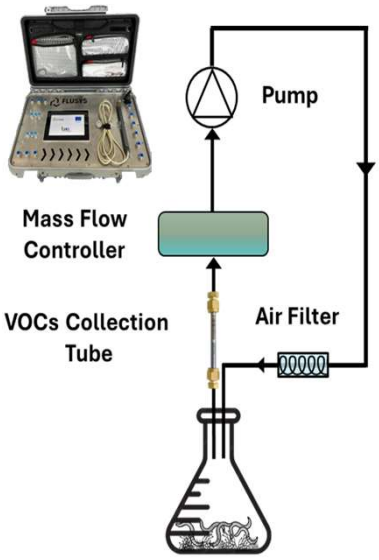
Pine wilt disease (PWD) has ravaged pine forests in many Asian countries, including Japan, China and Korea, rapidly spreading and ultimately evading established pest management strategies. The more recent outbreak occurred in Europe, in Portugal, in 1999. Since then, the pinewood nematode, *Bursaphelenchus xylophilus*, has been detected throughout Portugal mainland, Madeira Island and in Spanish pine forests from Galicia and Estremadura. In the last two decades, containment and mitigation of this priority pest has mobilized extensive investment. These efforts were partially inefficient, due also to the limited efficacy of the available detection and monitoring techniques.

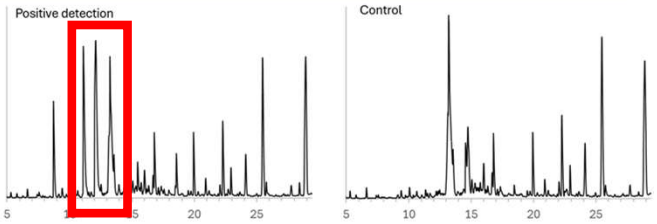
Plant Pest Prevention through technology-guided monitoring and site-specific control (PurPest) is an international collaboration among 18 institutions, including Institutes, Universities, Small and medium-sized enterprises (SMEs) and Government bodies from 11 European countries.





The project exploits VOCs released by pests to develop a sensor system prototype (SSP) that rapidly detects the target pests. The SSP aims at a simple, robust and reliable method for the identification of VOCs emitted from plant materials infected by a specific plant pest, allowing detection under laboratory conditions, during import and in the field.

The SSP contains sampling, separation and detection technologies in a compact gas chromatograph system (µGC) for the detection of low levels of PWN volatile biomarkers. Up to now, three volatile molecules have been identified as potential specific PWN biomarkers, providing a "fingerprint" for its presence.



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