

THE PURPEST PROJECT



As we step into 2025, the PurPest project extends its warmest wishes to our partners, collaborators, stakeholders, and the dedicated, engaged community. Your expertise, commitment, and support have been the driving force behind our mission to enhance pest detection and management, ensuring a more sustainable future. May the new year bring continued success, innovations, and even stronger collaborations. Together, we look forward to making 2025 an exciting year for PurPest—one where science, technology, and teamwork unite to protect our ecosystems, reduce risks, and deliver impactful solutions for agriculture and forestry across Europe.

INTERNATIONAL PARTNERSHIP FOR SUSTAINABLE PEST DETECTION



Conversation with the project leader **Andrea Ficke** – from research to real-world impact

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What motivated the start of the PurPest project?

I have seen and participated in many projects over the last 10 years. Good research projects, some of which very ambitious. But I could not see that they really made an impact. That they really addressed the actual challenges we face in the agrifood sector in a practical way. We were missing something. So, when my colleague at SINTEF asked if we should apply for the HEU project call focusing on preventing pest entry into Europe, I wanted to make sure this project was different. I wanted to make it work not just for the four years of funding, but beyond.

The concept of using odors or volatile organic compounds to manage insect pests have been worked on intensely, but it is really difficult to bring a concept on the market and put it to use. Each year, insect pests, pathogens, and nematodes are entering Europe with plant imports, hiding under leaves, waiting to develop symptoms or stay dormant in the soil. They are impossible to detect with the unaided eye and there is simply not enough time or financial resources to take samples from each incoming plant and check it properly.



So, together with our sensor people, chemists, software developers and pest experts, we identified which pests are most relevant for such a project and how a sensor platform could work to check hundreds of plants within a container in a short time. Control of plant imports is absolutely crucial to prevent more invasions of pests and reduce the threat to agricultural systems, forests and biodiversity.

With a diverse Project Consortium collaborating on PurPest, what has been the greatest advantage of this international partnership?

The more diverse a group is, the more innovative it can be - given people learn to understand and listen to each other. We come from very different disciplines and backgrounds. Technological tools plant experts didn't even think of are suddenly within reach, odor based signaling in plant pest systems is becoming a new field, sensor developers can apply their technology to. And economics and impact analysis helps both plant-pest researchers and technology experts to understand the flow of information, the barriers to implementation and the costs of in-action. It takes time and effort to recognize everyone's potential. However, with the dedicated PurPest team of researchers we have in the consortium, we keep our main goals in mind and work towards them together. The international partnership adds another layer of complexity to it, because of potential language barriers for stakeholders that feel less than comfortable with English, but we have people who can translate, allowing active communication despite that challenge. I expected to see more cultural differences that need to adapt to a certain ambition level, but that was really never a problem. Each partner is dedicated and enthusiastic and that is very rewarding.

The sensor system prototype (SSP) is a key innovation of the PurPest project. Could you explain how it works and its potential impact on agriculture and forestry?

The sensor platform will combine a pre-concentrator, a separator and different sensors to be able to detect and identify low amounts of odors or volatiles in a large volume of air in a relatively short amount of time (under half an hour). These odors will be specific to the pest we need to detect and allows the plant health inspector a faster and easier process of checking if imported plant material is pest free. Currently only 3% of all imported plant material is visually screened for pests and diseases, with an unknown percentage of false negatives. The risk of new and serious plant pests entering the EU, establishing and spreading is very high. The sensor platform will allow the plant health inspectors to screen all plants entering the EU and detect the target pest it has been trained on reliably, without significant additional costs. The concept of this sensor platform can also be applied in the field, where pests have been already established, so the farmer or forester can apply management strategies site-specifically, instead of wasting resources on broad applications.

How does the PurPest project align with the EU's Farm-to-Fork strategy and the broader goals of Horizon Europe?

To reach the destination of the Horizon Europe Farm2Fork strategy 'Fair, healthy and environment-friendly food systems from primary production to consumption', we need to prevent pest incursions and reduce pesticide use in the field.



Management of pests and pathogens becomes very resource demanding, if we cannot detect and target them properly. The Farm2Fork strategy is an initiative to reduce the carbon footprint of agricultural systems, while maintaining productivity. Reducing pesticides by preventing pest entry is an important step towards this goal.

Implementing technology to reduce risks of pest invasions threatening biodiversity in forests and plant productivity in agriculture is closely aligned with EU's greater goal of sustainable and profitable food production systems.

As the project leader, what has been the most exciting aspect of the PurPest project so far, and what are your expectations for 2025?

When PurPest got funded, I decided to enjoy managing it from the first day. There is so much to learn, not just the bureaucracy of project reporting, but working with people, both with administrators, superiors, researchers, users and interest groups. Anticipating bottle necks and challenges and addressing them. Conflicts, criticism, budget issues, and misunderstandings are all part of this journey and I expected up and downs along the way. However, nothing is as exciting as seeing how things are starting to work out. How a seemingly daunting situation is discussed between different partners and solutions are developed. There were a lot of unknowns in this project, the risk that things will not work out as expected. However, we have come already a long way and we see how our plant pest experts are identifying the target volatiles, how they learn and get excited about their findings and how the sensor developing partners are working across institutions and companies to find the best solutions. Finding benchmarks, assessment guides and testing reference compounds successfully. I am looking forward to 2025, as we are now entering the exciting phase of testing the prototype first under controlled conditions and then in the field, while constantly improving and verifying the performance. I can't wait to start talking to the actual users and see the functionality being tested, chatting about the benefits and the potential drawbacks and improving the sensor platform until it is ready for implementation.

**THE PURPEST PROJECT WISHES YOU
ALL THE BEST IN 2025!**