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Project duration: 012023 – 122026
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Website: www.purpest.eu

HORIZON EUROPE
HORIZON-CL6-2021-FARM2FORK-01-04
Tackling outbreaks of plant pests
RESEARCH AND INNOVATION ACTION

D6.2 – Public

PURPEST - Plant Pest Prevention through technology-guided monitoring and site-specific control

Communication, Dissemination and Exploitation Plan

VERSION	DATE
Version 1.2	26-07-2024

ABSTRACT

Deliverable 6.2 describes the activities planned for the Communication, Dissemination, and Exploitation of results of the project PurPest (Project number: 101060634). PurPest proposes the development of a unique concept for the control of serious plant pests during import of plant material and pest management in the field, based on profiling the specific volatiles released by pests or pest-attacked plants. In this project, a deep analysis of pest and host emitted volatiles will support the development and technological optimization of a novel portable sensor system prototype (SSP) for a swift and wider screening of potentially infected material. The hypothetical improvement in pest detection will be analysed in a socio-economical point of view to determine its impacts on European import industry and on society. This analysis can be used to inform policymakers on the stronger approaches to deal with current pest management strategies.

In this context, communication, dissemination and exploitation play a key role in the implementation of the PurPest concept. The communication, dissemination and exploitation plan was developed to outline the objectives, overall strategy, and necessary activities to effectively inform about and promote the project, ensure the availability of results for wider use, and facilitate practical utilization of research outcomes. Communication tools, channels and actions are presented and include the development of the PurPest logo and identity, creation of an appealing website, in association with the partner institutions websites, and the various social media outlets and networks to boost the communication of the project concepts and results. Dissemination actions are defined and outlined to maximize the impact of the project in alignment with the objectives of the Horizon Europe Farm2Fork strategy. The best disseminations routes are identified to appeal to stakeholder interest. PurPest aims to stimulate awareness, foster knowledge exchange, and facilitate the utilization of its research outputs. Finally, the exploitation plan is set forth to manage the research and innovation outcomes of the project and promote utilization of its main finds, even beyond the project duration. This document will be updated throughout the project duration to maintain its relevance to real conditions.

KEYWORDS: Identity, New technology, Policies, Social media, Website

DELIVERABLE ID	EC ID	DISSEMINATION LEVEL	DELIVERABLE TYPE
D6.2	D24	PU	PEDR

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List of Definitions and Abbreviations

Table 1- List of abbreviations

Abbreviation	Meaning
A	Authorities
BC	Business Community
BMSB	Brown marmorated stinkbug
BSc	Bachelor of Science
CA	Consortium Agreement
CBW	Cotton bollworm
Cl	Classified
CO	Confidential
DMP	Data Management Plan
DOI	Digital Object Identifier
END	End-Users
FAIR	Findable, Accessible, Interoperable and Reusable data
FAW	Fall armyworm
GP	General public
I	Industry
IPR	Intellectual Property Rights
KER	Key Exploitable Results
KPI	Key Performance Indicators
MSc	Master of Science
OA	Open Access
P	Publications
PA	Patent Filings
PhR	*Phytophthora*
PU	Public
PWN	Pinewood nematode
RC	Research community
RTO	Research And Technology Organizations
S	Students
SSP	Sensor System Prototype
TRL	Technology readiness level
VOC	Volatile Organic Compound
WP	Work package

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1. Introduction

1.1. Purpose of the document

This document introduces and describes the Communication, Dissemination, and Exploitation Plan developed to promote the PurPest project and its outcomes. Dissemination, exploitation and communication are key elements in our implementation strategies and are geared to stimulate interest, understand benefits and reduce potential adaptation barriers.

The present document outlines the objectives, overall strategy, and necessary activities to effectively inform about and promote the project, ensure the availability of results for wider use, and facilitate practical utilization of research outcomes. Communication, dissemination, and exploitation are not only contractual requirements but also crucial elements with numerous potential benefits for the project. These benefits include enhancing the visibility of the research, bolstering the reputation of participating partners, and fostering stakeholders' understanding of the topic and its wider significance.

Moreover, effective communication and dissemination will yield economic advantages and attract users interested in utilizing the project results. These measures contribute to strengthening the research and innovation landscape, providing a foundation for further advancements by others.

The following plan is designed to be a practical framework for PurPest ongoing communications and dissemination activities. It is based on identifying the available channels, determining the desired outcomes, identifying the target audience, and defining the strategy to achieve the intended objectives. In the event of unforeseen communication and dissemination opportunities arising during the project, this plan ensures their incorporation, providing comprehensive coverage, even if not explicitly addressed in the current document. For this purpose, the presented plan will be regularly updated, including any necessary modification, and adapted appropriately to the project's progress and new circumstances, including feedback from stakeholders and end-users. Ultimately, it will serve as a management tool for dissemination actions, available from M6 and updated in M24.

1.2. Definitions

The terms "Communication," "Dissemination," and "Exploitation" have distinct objectives, and although they may overlap to an extent, they might require different actions and target different audiences. In line with Participant Portal Horizon Europe Online Manual (European Commission, 2023) these terms are defined as:

- "Communication" means the measures for promoting the action itself and its results to a multitude of audiences, including the media and the public, and possibly engaging in a two-way exchange. Activities used for communication purposes are for example a public website, social media, or a newsletter;

- "Dissemination" refers to the public disclosure of project results through suitable methods, excluding those related to protecting or exploiting the results, achieved through various means, including the publication of scientific findings in any medium;

- "Exploitation" means the use of results in further research and innovation activities other than those covered by the action concerned, including inter alia, commercial exploitation such as developing, creating, manufacturing, and marketing a product or process, creating, and providing a service, or in standardization activities.

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1.3. Intended readership

This document is public and will be available to the public on the PurPest website and accessible to all interested parties including Research Community, Stakeholders and General Public. Additionally, PurPest project partners will be encouraged to follow the outline proposed in the plan.

1.4. Structure of this document

The deliverable 6.2 - Communication, Dissemination, and Exploitation Plan encompasses various essential elements. It defines the main actors responsible for communication and dissemination, outlines key messages, proposes a diverse mix of channels to engage with multiple stakeholders, identifies target groups, and establishes criteria for self-evaluation to assess the effectiveness of the plan.

The objective of the plan is to ensure the widespread dissemination of the project's message across technical, conservation, scientific, decision-making, and policy sectors, while also incorporating follow-up activities.

This document provides an overview of the communication, dissemination, and exploitation approach for the PurPest project. Section 1 serves as an introduction to the Communication, Dissemination, and Exploitation Plan. Section 2 outlines the general objectives, key messages, targeted audience, and overall strategy. Section 3 covers communication tools, channels, and activities. Section 4 provides detailed information on dissemination actions. Section 5 outlines the exploitation strategy. Lastly, Section 6 explains the implementation process of this plan.

1.5. Relationship with other deliverables

The proposed plan is intrinsically linked to PurPest WPs by setting the model for sharing and promoting in real time its achievements and milestones. Specifically:

- In WP1, by disclosing links to lists D1.2, D1.3, D1.4 and D1.5, by storing on the selected databases, and on the appropriate channels (website, Zenodo, etc); promoting their dissemination on Social Media and relevant Networks; and promoting the manuscripts of D1.6 on its Website and Social Media.
- In WP2 and WP3, by updating the target audience on technological advancements and fostering discussion on the appropriate forums for D2.1, D2.3, D3.1 and D3.3.
- In WP4 and WP5, by promoting dissemination of D4.1 and D4.2. and D5.1 through to D5.6.

2. WP6 Summary

The PurPest project

PurPest aims to exploit the specific volatile organic compounds (VOCs) released by pests or by the plants attacked by certain pests. These VOCs have been studied for many pests, but their pest detection potential has not yet been properly exploited. In PurPest, VOC signatures will be determined for *Phytophthora* spp. (PhR), the Fall armyworm (FAW), the Cotton bollworm (CBW), the Brown marmorated stinkbug (BMSB) and the Pinewood nematode (PWN) under different abiotic stress conditions.

A summarized VOC database will be exploited to optimize existing and develop new sensor concepts to detect pest-specific VOCs, starting from proof of concept (TRL3) to demonstration in field trials (TRL6). The sensor concept is based on the detection of pest-specific VOCs emitted by host plants invaded by one or several pests, and under abiotic stress. With updated and tailor-made technological equipment, a sensor system prototype (SSP) will be developed and optimized to detect the VOCs and identify target pests.

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Thus, PurPest aims to develop, validate, and demonstrate this innovative sensor platform that can rapidly detect five different pests during import and in the field to stop their establishment and reduce pesticide inputs by at least 50%.

The impacts of a pest detecting SSP are substantial, e.g., it drastically decreases the risk of new pest invasions into Europe and reduces the need for control measures, since it enables a systematic and reliable screening of plant material for pests; in nurseries, it prevents distribution of pest infested plant material from exporting to importing countries, while in-field detection enables site specific control of pests, further reducing pesticide use.

To contribute to assessing the effects of introducing this new development in pest detection, PurPest will evaluate the socio-economic and ecological impact of these 5 pests and how the new detection concept influences these impacts.

As several control options, including the eradication of target pests, will be available with different implications for nurseries, importers, farmers and forest owners, a stakeholder survey presenting different scenarios will be conducted.

This analysis will be the basis for formulating EU policies to ensure appropriate and systematic testing of plant material during import. Direct communication with stakeholders via the advisory board, workshops and webinars is part of PurPest's multi-actor approach to affirm involvement of all interest groups along the value chain.

2.1. Key messages

In PurPest, project innovation boosts sustainability through the advancement of a timely pest detection. PurPest is committed to enhance pest detection and monitoring by preventing pest entry and spread. Ultimately, it promotes sustainability by endorsing precision use of pesticides, effectively reducing their use, and supporting integrated pest management approaches. Through import control efforts and knowledge dissemination, it strives to improve plant protection, biodiversity preservation, and contribute to a greener future. Foreseeing the main solutions produced by PurPest, the key messages are centred around the concepts of:

- Advancement of Technology for Pest Detection: PurPest is developing cutting-edge sensor technology to detect and monitor plant pests by detecting VOCs, endorsing an accurate and efficient pest management.
- Early Detection for Effective Pest Control: our innovative sensor system enables early detection of plant pests, allowing for timely intervention and targeted pest management strategies, safeguarding plant health and biodiversity.
- Protecting Agriculture and Forests from Invasive Pests: PurPest engages in import control efforts by identifying and preventing the entry of quarantine and priority pests, safeguarding agricultural and forestry systems from the risks of invasive species.
- Sustainable Pest Management Practices: through non-invasive detection methods and targeted interventions, PurPest supports sustainable agriculture and forestry practices, reducing the reliance on harmful pesticides and promoting ecological balance.
- Integrated Approach for Comprehensive Pest Control: the PurPest project promotes integrated pest management approaches, combining early detection, monitoring, and targeted interventions to effectively control pests, ensuring the long-term health and productivity of crops and plants.

By delivering these key messages, rising awareness, and encouraging engagement, the targeted audience will gain an understanding of project's contributions to advanced pest detection, sustainable practices, and the protection of agroecosystems and forests from invasive pests.

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2.2. Keywords

The major keywords for PurPest are: Import control; Pest detection and monitoring; Prevention; Sensor systems; Volatile organic compounds (VOCs)

2.3. Targeted Audiences

Ensuring the success of the project requires reaching appropriate target groups that encompass all relevant stakeholders. Thus, it is crucial to ensure a wide outreach, captivate important information mediators connected to end-users and stakeholders and regularly updating these target groups about the project's objectives, progress, outcomes, products, and conclusions.

In the context of PurPest's WP6 activities, the selection of appropriate channels relies on identifying the specific target audiences. At this stage of the project, the following target groups have been identified for the dissemination and exploitation endeavours:

- Interested General Public [General public (GP), Students (S)]
- Specialized Audience [Industry (I); Research community (RC), Business Community (BC), End-Users (END)]
- Institutional decision-makers [Authorities (A)]

Throughout its duration, the project aims to engage various stakeholders, including authorities, industry representatives, the research community, students, the business community, end-users, and the general public. These targeted stakeholders play a vital role in the project's success and the broader adoption and utilization of its outcomes.

2.4. Goals and Objectives of WP6

Overall, WP6 of the PurPest project plays a crucial role in achieving project goals and aims to effectively communicate project achievements, share research findings, engage stakeholders, facilitate the exploitation of project results, and contribute to policy development. WP6 is driven by several objectives. Firstly, it seeks to effectively communicate the project's outputs, encompassing the development and validation of pest-specific volatile organic compound (VOC) sensors. This ensures the widespread dissemination of important research findings and technological advancements. Secondly, WP6 aims to raise awareness to the promotion of sustainable practices in agriculture and forestry by prevention of the entry of quarantine and priority pests, thus advocating for low-pesticide input systems. Thirdly, the project intends to exploit its results by reaching a diverse range of end users, including policymakers, administrators, scientists, practitioners, activists, and the general public. This broad dissemination ensures the practical application of the project's outcomes and benefits various stakeholders. Additionally, WP6 emphasizes collaboration with similar initiatives to establish global connections with countries affected or threatened by the pests addressed by PurPest, effectively, aiming to establish a network that can boost exploitation of the results. Lastly, it aims to support relevant plant health policies in the European Union and Associated Countries through clear, science-based messages, contributing to informed decision-making and effective policy implementation.

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3. COMMUNICATION TOOLS, CHANNELS AND ACTIONS

3.1. Communication objectives and strategy

A good communication strategy ensures that the wider public is informed of the importance of the project's activities and will support PurPest towards achieving impactful socio-economic changes. By effectively utilizing communication channels, the project will not only inform the public about the importance of its activities but also seek their support in achieving its goals. In this way, the project aims to engage in bidirectional communication, actively sharing new research findings and receiving valuable knowledge, know-how, and perceptions from the public. To foster dialogue and engagement, PurPest encourages interaction through social media platforms or a dedicated contact form on its website. By promoting transparency and open communication, the project aims to raise awareness, amplify key messages, and ensure that the societal benefits of its endeavours are effectively communicated to the public.

Within the communication strategy, a set of measures will be selected and tailored to the target group in consideration. Activities take a variety of forms to reflect a diverse audience and the distinct levels of information that are relevant to each audience. This enables other researchers to learn; industries and companies in the commercial sector to acknowledge new business opportunities; students to become excited by science and technology; policy makers to strategize national and European priorities and for the citizens to became engaged with and supportive of environmental actions. External communication is important in this strategy to:

- Engage with stakeholders including industry and the citizens;
- Promote aims of the wider EU work program;
- Develop links to exploit results through further research and development;
- Communicate the approach and outputs from PurPest to society.

The Communication plan will be continuously updated, serving as a management tool for Communication, Dissemination and Exploitation actions. These updates will include any necessary modification and adapt appropriately to project progress and new circumstances, including feedback from stakeholders and end-users.

The project logo and a communication template are established to ensure that all project resources look professional and consistent, but also for the PurPest brand to be easily recognizable and familiar. A project website has been already developed by WP6 leader partner as the first source of information for stakeholders and includes a breakdown of PurPest's strategy and actors as well as information at a public-interest level. Links to technical data will be included (e.g., public deliverables and fact sheets). The project website will be updated and maintained regularly throughout the project to make it relevant, dynamic and engaging.

The external communication will be approached using the following resources:

- Production of digital project material for events and external use;
- Development and maintenance of a project website;
- Press releases promoting milestones from the project;
- Non-scientific articles and annual newsletter and topical mailing list;
- Social media presence is used to communicate the relevant activities or results generated by the project. These might be a combination of channels created for the project and channels managed and owned by the consortium partners to ensure visibility and a wide outreach;
- Educational materials for students and public (e.g., fact sheets, video, or graphics);
- Use of EC dissemination routes (CORDIS, EIP-Agri EU horizon magazine - EU CAP Network);
- Interactive virtual workshop session for students and researchers (Webinar);
- Workshops to describe the key outcomes of PurPest;
- Interaction with relevant established networks to further promote results.

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Impact monitoring using indicators specific to each communication channel (e.g., website analytics, social media views/follows/actions, etc.) will be used to determine the effectiveness of dissemination and communication strategies. This will also help to revise the communication strategy and activities annually to improve impact.

3.2. Project identity and logo

The development of a recognizable identity is crucial for enhancing the visibility and facilitating effective communication of the PurPest project. Creating the PurPest brand enables stakeholders and the public to easily identify and connect with the project. To achieve this, a distinct project identity has been carefully crafted, ensuring its recognition, and establishing a cohesive and consistent visual brand (Fig. 1).

Figure 1 - The PurPest brand (left), horizontal colour, light and dark variations of the logo (middle column) and vertical colour, light and dark variations of the logo (right column), to be used in communication, dissemination and exploitation throughout the project.

This includes the creation of a unique project logo, a defined colour palette, a style guide, specific typography, and other design components (Fig. 2 and 3). These elements are utilized across various project materials, such as documents, reports, presentations, the project website, social media platforms, and promotional materials. By employing a consistent visual identity, PurPest can effectively convey its message and stand out among similar initiatives.

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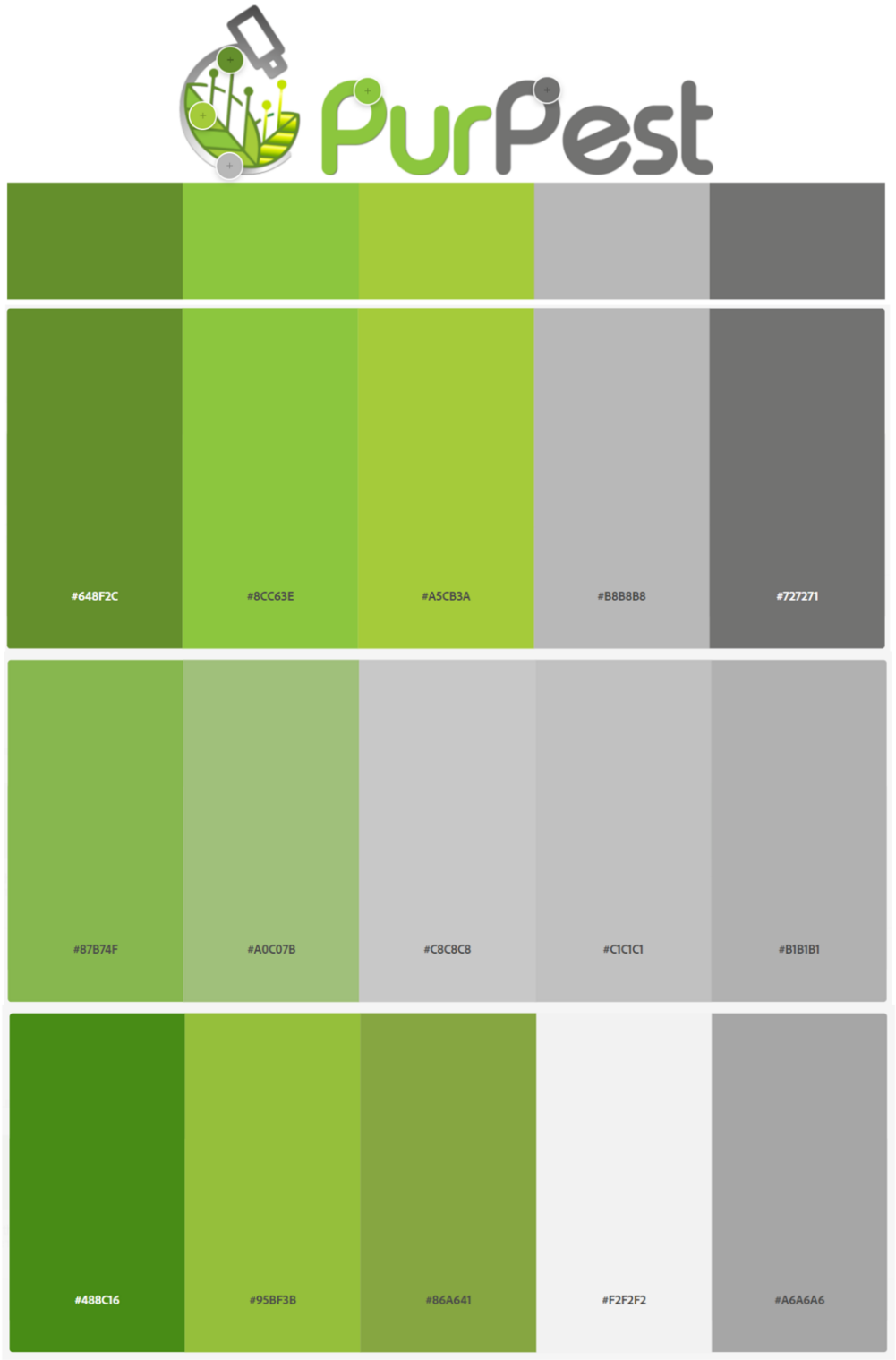

Figure 2 - Color scheme with the suggested colour palette to be used in PurPest communication, dissemination and exploitation. Colour palette was obtained from free colour generator at Adobe Color (color.adobe.com).

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The logo and its variations are available to the consortium in the communal SharePoint storage that serves as an internal communication space for the PurPest consortium.

Document templates were made available to facilitate the creation of various project-related materials, including documents, reports, presentations, and other outputs for internal and external purposes. These templates are designed to support effective communication and ensure consistency in the presentation of project information. They can be accessed by the consortium on the internal SharePoint platform for PurPest.

Figure 3 - Document and presentation templates made available to the consortium of the PurPest project.

The preferred font is Arial for the Cover pages, font size 18 for the project title, 16 for headings and 12 text body. For documents and reports, the suggested font is Times New Roman, font size 14 for headings and 12 text body and Heading 3. For tables Arial font is used in the font size 9.

In presentations preferred font is Calibri, font size 48 for the title, 24 for the subtitle, and 28 for the text.

The PurPest project uses widely accepted formats, such as:

- Documents/Reports/Publications: .PDF/A, txt, doc/docx

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- Spreadsheets: .xls/.xslx
- Pictures: jpg, png
- Datalogs: .dat, .csv
- Databases: .csv
- Self-describing formats: netCDF, HDF

3.3. Targeted audience

Various communication activities are implemented to engage with major stakeholders, end-user groups, and the general public to effectively share information, promote dialogue, and raise awareness about its objectives and outcomes. The targeted groups for the PurPest project include:

- Authorities (A): This includes policymakers, government agencies, and regulatory bodies involved in the fields of plant health and pest management.
- Industry (I): This refers to companies and organizations with direct activity in agriculture, forestry, pest control, and related industries.
- Research community (RC): This comprises scientists, researchers, and academic institutions working in the fields of plant health, pest management, sensing components, data analysis and related disciplines.
- Business community (BC): This involves businesses and enterprises that invest directly or indirectly on plants and plant products influenced by plant pests and their control measures.
- End-users (END): These are individuals or organizations who directly benefit from the project's outcomes and technologies, such as farmers, foresters, and land managers.
- General public (GP): This includes the wider population who may have an interest in plant health, sustainable agriculture, and the impact of pests on the environment and society.
- Students (S): This refers to students studying relevant fields, including agriculture, biology, biochemistry, environmental science, physics, chemistry and related disciplines, who can become interested and contribute to future advancements in pest management and plant health.

Engaging with these target groups allows the PurPest project to reach a diverse range of stakeholders, create awareness, and foster collaboration for effective plant pest prevention and management.

3.4. Communication Channels

The PurPest project utilizes various communication channels to effectively reach its target audiences. These channels include:

- Project Website;
- Websites from Partner Institutions;
- Social Media;
- Scientific Networks

The project maintains an official website that serves as a central hub of information. The website provides comprehensive details about the project, its objectives, activities, and outcomes. It offers resources, documents, news updates, and contact information, allowing stakeholders and the public to access relevant information about PurPest.

Partner institutions associated with the PurPest project have their own websites dedicated to sharing research-related information. These websites can provide specific insights into the activities and contributions of each partner, allowing for broader dissemination of project results and fostering collaboration within the partner network.

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Social media platforms such as X (formerly known as Twitter) and LinkedIn are utilized to reach a wider audience and engage with stakeholders. PurPest maintains active social media profiles where project updates, news, events, and relevant content are shared. Social media platforms enable interactive communication, allowing audiences to ask questions, provide feedback, and share information about the project within their networks.

PurPest actively engages with relevant networks and communities in the field of plant health, pest management, and related areas. Engagement with networks ensures that the project's messages and results are shared with key stakeholders and influencers in the field.

3.4.1. Project Website

The PurPest project website is a central platform that provides a wealth of information about the project, its partners, workplan, and budget. It serves as a central repository of project-related content, allowing visitors to access detailed information about the project's objectives, methodologies, and outcomes (Fig. 4).

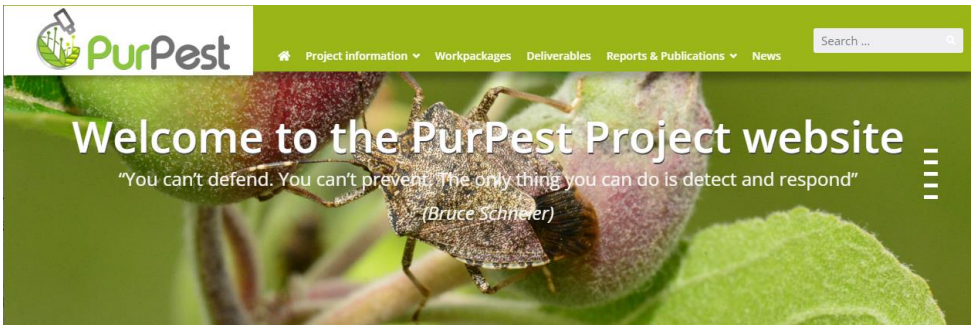

Figure 4 - PurPest webpage online since April 2023 (www.purpest.eu).

The website features dedicated sections that provide in-depth information about the project's work packages, outlining the specific activities and tasks undertaken within each phase of the project. Visitors can explore the deliverables and milestones achieved, gaining insights into the progress made and the results obtained.

In addition, the website offers access to a collection of reports and publications generated by the PurPest project. These resources include research findings, technical documents, scientific articles, and other publications that contribute to the advancement of knowledge in the field of plant pest prevention and control.

The News section of the website provides regular updates on the project's activities, events, and achievements. Visitors can stay informed about the latest developments and follow the project's journey through the news articles and announcements.

The project website also includes a contact section, where visitors can find contact information for the project team. This facilitates communication and allows interested individuals or organizations to reach out for further information, collaboration opportunities, or to inquire about specific aspects of the project.

To track the website's reach and impact, a visit counter is incorporated, providing insights into the number of visitors and their engagement with the project website. This data helps evaluate the website's effectiveness in disseminating project information and engaging with the target audience.

Information on the website will be provided at a public-interest level, as well as links to technical data (e.g., public deliverables and fact sheets). The project website will be updated and maintained regularly throughout the project to make it relevant. As such, the PurPest website will be operational and will remain available for at least 5 years beyond the completion date of the project.

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Overall, the project website serves as a comprehensive and dynamic platform that showcases the PurPest project, offers valuable resources, facilitates communication, and keeps stakeholders and the public informed about the project's progress and outcomes.

3.4.2. Websites from the partner institutions

As stated, the partner institutions involved in the PurPest project maintain their own dedicated websites aimed at sharing research-related information (Table 2). These websites can serve as valuable resources that contribute to expanding the reach of communication efforts, fostering collaboration, and promoting the spirit of international cooperation within the academic community. Through these platforms, partners can disseminate project updates, scientific findings, and relevant resources, facilitating knowledge exchange and encouraging engagement on a larger scale.

Table 2- List of Websites from the partner institutions who will share project updates

Partner institution	Logo	Website	Social Media
NIBIO	NIBIO Norwegian Institute of Bioeconomy Research	https://nibio.no/en	https://www.linkedin.com/company/nibio https://x.com/NIBIO_no https://www.facebook.com/Nibio.no https://www.youtube.com/@Norskinstituttforbiokonomi
SINTEF	SINTEF	https://www.sintef.no/en/	https://www.linkedin.com/company/sintef https://x.com/SINTEF https://www.facebook.com/sintefforskning https://www.instagram.com/sintef_forskning
NTNU	NTNU	https://www.ntnu.edu/	https://www.ntnu.edu/ https://x.com/NTNU https://www.facebook.com/ntnu.no https://www.youtube.com/user/ntnuinfo
JKI	JKI Julius Kühn-Institut Federal Research Centre for Cultivated Plants	https://www.julius-kuehn.de/en	https://www.julius-kuehn.de/en/ https://x.com/JKI_Bund https://www.linkedin.com/company/julius-k%C3%BChn-institut https://www.youtube.com/@juliuskuhn-institut-bundes9485
SAFTRA	SAFTRA PHOTONICS	https://www.saftra-photonics.org/	https://www.saftra-photonics.org/ https://www.linkedin.com/company/saftra-photonics/ https://www.youtube.com/@saftraphotonics7743
PLI	PLANTE- OG IMPORTKONTROLL	https://importkontroll.com/	https://www.facebook.com/importkontroll
UNIPD	Università degli Studi di Padova	https://www.unipd.it/en/	

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INIAV	Instituto Nacional de Investigação Agrária e Veterinária, I.P.	https://www.iniav.pt/	https://www.linkedin.com/company/instituto-nacional-de-investiga%C3%A7%C3%A3o-agr%C3%A1ria-e-veterin%C3%A1ria-ip/ https://x.com/INIAV_IP https://www.facebook.com/INIAV.IP https://www.youtube.com/channel/UCfNa_yKtEcsXt-C6dGliTGQ/
MENDELU	Mendel University in Brno PhytOphthora Research Centre	http://www.phytophthora.org/	
VOL	VOLATILE	https://volatile.ai/enose	https://www.linkedin.com/company/volatile-ai/about/
AIRMO	airmotec	https://www.chromatotec.com/	
WU	WAGENINGEN UNIVERSITY & RESEARCH	https://www.wur.nl/en/research-results/chair-groups/social-sciences/agricultural-economics-and-rural-policy-group.htm	
DGAV	dgav Direção Geral de Alimentação e Veterinária	https://www.dgav.pt/	https://www.facebook.com/dgavpt/ https://www.linkedin.com/company/dgavpt/mycompany/ https://www.youtube.com/channel/UCBVK32gNTvjXfXSNdmuuOkQ
CNP	centro PINUS	https://www.centropinus.org/	https://www.facebook.com/centropinus https://www.linkedin.com/company/centropinus https://www.youtube.com/channel/UCj__fxdOwIpVC-Qbf4tYsHA https://www.instagram.com/centropinus
UNIEV	UNIVERSIDADE DE ÉVORA	https://www.hercules.uevora.pt/	https://www.facebook.com/laboratorioHERCULES https://www.instagram.com/herculeslaboratory/
UNINE	unine	https://www.unine.ch/farce/home.html	
WBF	Schweizerische Eidgenossenschaft Confédération suisse Confederazione Svizzera Confederaziun svizra Agroscope	https://www.agroscope.admin.ch/agroscope/en/home.html	https://ch.linkedin.com/company/agroscope https://x.com/Agroscope https://www.youtube.com/user/agroscopevideo https://www.facebook.com/agroscope/ https://www.instagram.com/agroscope_ch

The research leading to these results has received funding from Horizon EUROPE, the European Union's Framework Programme for Research and Innovation (HEU) under grant agreement n° 101060634.

UWAR	WARWICK THE UNIVERSITY OF WARWICK	https://warwick.ac.uk/	https://www.linkedin.com/school/uniofwarwick/ https://x.com/uniofwarwick https://www.youtube.com/user/uniwarwick https://www.facebook.com/warwickuniversity https://www.instagram.com/uniofwarwick/

3.4.3. Social Media

The PurPest project utilizes X (formerly known as Twitter) and LinkedIn as its main social media platforms for communication and engagement with stakeholders (Fig. 5 and 6). These platforms are chosen for their wide reach and effectiveness in sharing project updates, news, events, and relevant content. X allows for real-time communication, concise messages, and the use of hashtags to reach a broader audience interested in plant health and pest management. LinkedIn, on the other hand, offers a professional network where project updates and information can be shared with a targeted audience, including industry professionals, researchers, policymakers, and other relevant stakeholders. By utilizing these social media platforms, PurPest aims to maximize its visibility and engage with its audience.

Figure 5 - PurPest on X (https://x.com/PurPest_EU)

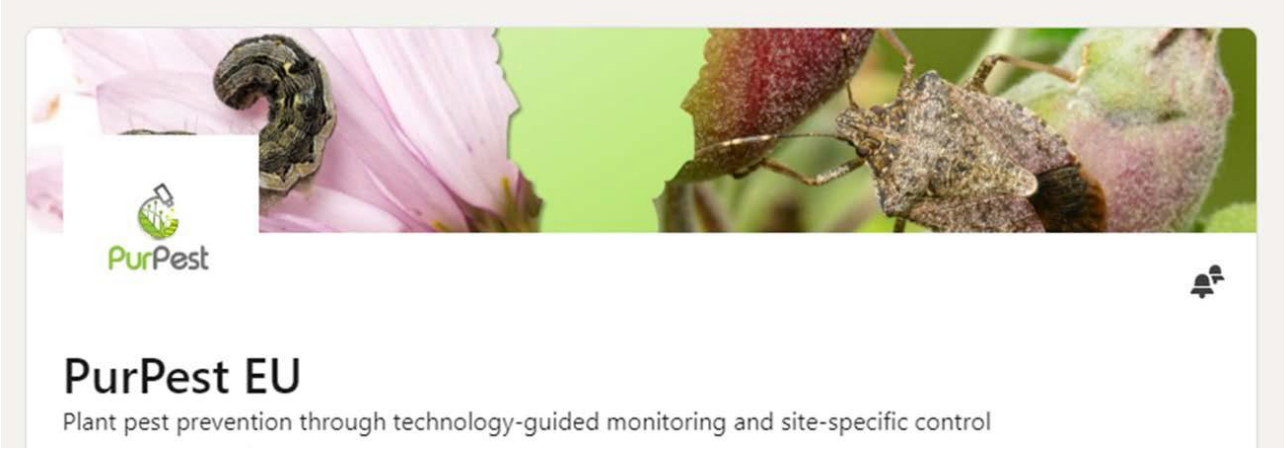

Figure 6 - PurPest on LinkedIn (https://www.linkedin.com/company/PurPest/about/)

The research leading to these results has received funding from Horizon EUROPE, the European Union's Framework Programme for Research and Innovation (HEU) under grant agreement n° 101060634.

3.4.4. Networks

A PurPest community has been established in the Zenodo repository (https://zenodo.org/communities/purpest-heu/about), and the project will upload all its public datasets and deliverables, once they have been "approved" in the Grant Management Services Portal, as well as scientific publications to this community. In addition, we will link all our uploads to the European Commission Funded Research (OpenAIRE) community for maximum findability. Wide range of partners will promote the project (see Table 2 for participants list). The diverse consortium of partners ensures a network beyond the project for a wide dissemination of results and innovations for further development and adoption. SMEs from 4 countries (Norway, France, Lithuania, and Slovakia) secure a network to sensor technology industry and relevant end-users, universities, and research institutes from 8 countries secure outreach activities towards policy makers and regulatory agencies, technology development and farming communities representing end-user groups for all technologies.

3.4.5. General public outreach

The project recognizes the importance of informing the wider public about its activities and the positive socio-economic impacts it aims to achieve. Through effective communication, PurPest seeks to engage the public and raise awareness about the societal benefits it strives to secure.

To foster engagement with the general public, PurPest will actively promote dialogue through the listed communication channels. These platforms will serve as avenues for exchanging information, answering questions, and fostering a sense of collaboration and involvement with the project.

By keeping the public informed and actively involving them in conversation, PurPest seeks to build a strong and supportive network who understand and appreciate the importance of sustainable pest management and its broader societal implications.

3.4.6. Knowledge Transfer

Knowledge transfer is a crucial aspect of the PurPest project. The educational aspect of the project will follow simple and clear language and other visual aids to ensure audience attention and facilitate dialogue. An important goal of Horizon Europe and the PurPest project is to contribute to high-quality research training at various academic levels, including master's, doctoral, and post-doctoral levels. PurPest provides training opportunities for three Ph.D. students, two postdoctoral researchers, and six MSc students. These individuals undertake research in diverse areas related to the project.

At WU, one PhD at AEP student conducts stakeholder surveys and literature research to analyse the potential socio-economic impact of the VOC based pest detection concept. Another Ph.D. student works at UNINE on the VOC collection from plants infested with the FAW, supported by two MSc students. INIAV employs one Postdoc and one MSc student to determine the VOC signatures from Pine trees and pinewood-based material infested with the PWN and contribute to WP6, while two MSc students will support MENDELU efforts to investigate the VOC signatures from different *Phytophthora* species in pure culture and from different host plants infected with PhR. A postdoc will be employed both at JKI and at UNIPD to work on the interaction studies between different pest groups and on the VOC's signature emitted by fruit trees infected with the BMSB.

Through these research positions, PurPest aims to enhance research capabilities, foster collaboration, and contribute to the training and development of the next generation of researchers.

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4. DISSEMINATION ACTIONS

4.1. Dissemination objectives and strategy

The dissemination objectives and strategy of PurPest are designed to maximize the impact of the project in alignment with the objectives of the Horizon Europe Farm2Fork strategy 'Fair, healthy and environment-friendly food systems from primary production to consumption'. The dissemination strategy of PurPest aims to raise awareness about the project and its publicly funded research, ensuring that the outcomes reach a wide audience and stakeholders are informed. Secondly, the strategy focuses on increasing the market uptake potential of the project's results, promoting their practical application and adoption by relevant industries and stakeholders.

To achieve effective dissemination, PurPest will employ various outputs, including digital brochures, promotion of results on the project website and through social media, informative press releases, articles in scientific journals, educational materials, newsletters, video news releases, flyers, workshops, reports, field days, and project campaigns to showcase prototypes (Table 3).

The dissemination activities will target academia, industry, and other stakeholders through scientific and technical papers, as well as selected internationally recognized events. The consortium recognizes the importance of open access and will provide unrestricted access to papers published from PurPest, preferably through the "gold" open access option.

By implementing this comprehensive dissemination strategy, PurPest intends to create significant awareness, foster knowledge exchange, and facilitate the use of its research outputs. This approach ensures that the project's findings and innovations have a meaningful impact on different levels.

Table 3- Outline of the Dissemination strategy with relevant target audience groups*

Type of engagement	Style	Planned activities	Target audience
Brochure (digital)	Very accessible language	5	All
Content in social media and consortium website	Very accessible language	LinkedIn posts >20, Tweets > 20, Website 1, Youtube videos >5	All
Press releases	Informative, non-technical, formal language, general public	10-15	All
Articles in scientific journal	Technical language	14	RC
Educational material	Very accessible language	8-10	S, GP
Newsletter	Informative, non-technical, formal language	10	A, I, RC,
Video News Release	Very accessible language	2	GP
Flyers	Very accessible language	5-7	All
Workshops	Informative, non-technical, formal language	5	I, RC, A
Reporting and evaluation	Informative, non-technical, formal language	>20	I, RC, A
Organizing field days and project campaigns to demonstrate prototype	Informative, non-technical	6	GP, I, A, END

* Acronyms for target stakeholders: Authorities (A), Industry (I) Research community (RC), Business Community (BC), End Users (END), General public (GP), Students (S)

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4.2. Targeted audience

The dissemination activities consider the specific needs and interests of different audience groups and utilize appropriate language and channels to effectively convey the project's findings. The results will be disseminated on various levels to the Research community, Students, Business Community, Industry, Authorities but also to End Users, and General Public.

The research community, including scientists, academics, and researchers, forms an important target audience for the dissemination of PurPest results. The business community and industry stakeholders are targeted to raise awareness of the potential applications and commercial opportunities arising from the project. Authorities, including regulatory bodies and policymakers, are important recipients of the project's dissemination efforts, as they play a crucial role in shaping policies and regulations. The project aims to provide them with evidence-based findings and recommendations to support informed decision-making. PurPest also aims to disseminate practical information, guidelines, and best practices to the end users and general public, that can directly benefit from the results of this project. Furthermore, PurPest seeks to inspire and educate students, so dissemination activities in Academia will be encouraged.

4.3. Dissemination routes

PurPest will generate diverse media outputs, including digital brochures, the promotion of results on the project website and through social media platforms, informative press releases, articles in scientific journals, educational materials, newsletters, video news releases, flyers, workshops, reports, field days, and project campaigns to showcase prototypes.

The research community will be engaged through active participation in relevant conferences within the research fields, as well as through the publication of articles in scientific journals. This route of dissemination requests specific terminology and appropriate technical language. Published scientific articles will be available on the PurPest website. Academia will also be well-informed through educational materials designed for students, presented in a scientific but accessible language. The research community, industry stakeholders, and authorities will receive information using informative, non-technical formal language through newsletters, reports, and workshops.

End users and the general public will be invited to actively participate in field days and project campaigns, providing them with opportunities to witness the demonstration of prototypes. These events will also involve industry stakeholders and authorities.

Video news releases will be produced specifically for the general public, while digital brochures, press releases, flyers, and content published on social media and the PurPest website are intended for all audiences, ensuring widespread dissemination of information.

4.4. Open access and FAIR data

Open Science is an umbrella term that encompasses various practices aimed at making academic research more accessible, inclusive, and transparent. It covers several movements such as open access to publications, open research data, open-source software, and open collaboration. Each one of them has a specific goal but a common objective to remove the barriers for sharing any kind of output, resources, methods, or tools, at any stage of the research process, trying to re-define the paradigm of the future of knowledge creation and dissemination of scientific knowledge. With the aim to have a more open science, the EU strongly encourages the production of FAIR data, the data that is Findable, Accessible, Interoperable and Reusable.

PurPest is committed to supporting the FAIR principles through several mechanisms, according to defined data openness of the WPs (Table 4).

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Table 4- Data availability and openness according to the first analysis of data management policy.

Data set types	WPs involved	Open access
Experimental data e.g., plant experiments, development of materials, coatings, sensors with new properties.	WP1, WP2, WP3	Yes
Observational data regarding test and demonstration of sensor performance in real environment.	WP4	Yes
Dissemination and communication data of partners.	WP6	Yes
Exploitation data of project partners.	WP6	No

PurPest will employ a repository management system Zenodo, where all relevant project information and data will be uploaded. Zenodo is a general-purpose open repository developed under the European OpenAIRE program and operated by CERN. It allows researchers to deposit research papers, data sets, research software, reports, and any other research related digital artefacts. This data will be searchable, freely accessible, and available in an interoperable format, ensuring its easy reuse in line with FAIR principles.

In case of research data, open access (OA) journals will be considered and chosen depending on the intended audience and for exploitable results, the project will establish aspects such as background, foreground, exploitation routes, and partner involvement, implementing an intellectual property rights (IPR) strategy and following an Exploitation Plan.

The project will leverage machine learning to analyse the VOC database, identifying patterns that can be used for VOC detection. Further open access of publication and research data will be ensured via the repository management system through certain bibliographic metadata that identify the publications.

The PurPest project will aim to deposit the research data needed to validate the results in the deposited publication at the same time as the publication itself in the same data repository. Each dataset will be given a persistent identifier (Digital Object Identifier, DOI), supplied with relevant metadata, and linked to the project name and grant agreement number. Publications and underlying research data will be linked to a Creative Commons license that will regulate reuse of the PurPest research data. In addition, tools for validating the results via the repository will be made available. Standardization issues will also be addressed in the exploitation strategy, according to market needs, and avoiding any non-technical barrier at this concern on the project field.

Produced deliverables and other project documents have marked Dissemination Level described as Public, fully open (PU), Confidential, restricted (CO) and Classified information (Cl) (Table 5).

Table 5- Possible dissemination levels

Dissemination Level		
PU	Public, fully open, e.g., web	
CO	Confidential, restricted under conditions set out in Model Grant Agreement	
Cl	Classified, information as referred to in Commission Decision 2001/844/EC.	

Data sets with dissemination level "confidential" (non-anonymous datasets) will not be shared due to privacy and security. This data will not be reusable as default. If such cases arise during the project, this will be informed in the WP7 - Data Management Plan (DMP).

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5. EXPLOITATION FRAMEWORK

5.1. Exploitation strategy

The objective of the exploitation strategy is to ensure the use of research and innovation outcomes achieved within the PurPest project. The exploitation strategy of PurPest will encompass commercial, technical, research, policy-making, and educational goals, targeting various stakeholders including:

- Import control agencies and companies;
- Plant nurseries;
- Plant wholesalers;
- National plant protection organizations;
- Farmers;
- Foresters;
- Landscape associations and
- Citizens

All sections of the exploitation strategy and overall plan will be implemented throughout the project. To monitor the exploitation of results, an exploitation committee led by AIRMO in collaboration with SINTEF will hold meetings every 12 months. The exploitation committee will provide support in capturing, evaluating, protecting, managing, and exploiting the project's results. PurPest will leverage the European Commission's Horizon Results Platform to maximize the exposure and potential exploitation of project results. This platform will facilitate the connection between policymakers and researchers, granting access to the project's key exploitable results (KERs) that hold high potential value.

The main expected KERs, along with the envisaged paths for result exploitation and the consortium's background intellectual property (IP), serve as a foundation for the initial version of the PurPest Exploitation Plan. These elements will be continuously updated throughout the project duration.

The industrial partners involved in the project will have clear opportunities for commercial exploitation, enabling them to gain competitive advantages through the utilization of PurPest results. Additionally, universities and research and technology organizations (RTOs) will benefit from the project through advancements in knowledge and innovation in scientific and technological aspects. This will contribute to increased scientific output, including scientific publications, fostering international visibility and reputation.

PurPest has deliberately established cooperation teams among partners to facilitate specific developments. For example, the SSP will involve close collaboration between academia (UWAR), a research institution (SINTEF), and three SMEs (VOL, AIRMO, and SAFTRA). This collaborative model ensures flexibility and efficient decision-making, which can be crucial during the development of new technologies.

The exploitation strategy of the PurPest project will involve the identification of suitable legal frameworks and mechanisms to safeguard its intellectual assets and ensure their effective utilization. The aim is to maximize the value and impact of the research and innovation outcomes. This will be achieved by employing appropriate legal instruments such as intellectual property rights (IPR) protection, patent applications, copyrights, trademarks, and other relevant legal mechanisms. Within the project, WP5 is dedicated to assessing the potential ecological and economic impact of the five target plant pests, analysing the benefits and costs of the eradication scenario, identifying farmers' preferred approaches for pest control, and developing recommendations to mitigate the impact of these pests. This work will culminate in the drafting and delivery of policy recommendations.

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5.2. Project exploitable results

The exploitable results of the PurPest project encompass a range of innovative technologies, methodologies, and knowledge that hold potential for further development, utilization, or commercialization for various purposes (Table 6). The specific exploitable results of the project include, but are not limited to:

- **Intellectual property**: The project will generate intellectual property in the form of publications (P) in scientific journals, patent filings (PA) to protect intellectual property, and the potential for trademarks to establish brand recognition. These intellectual property rights can be protected and further exploited through licensing agreements or collaborations with industry partners.
- **Research findings and scientific knowledge**: The project generates new scientific knowledge and research findings related to plant health, pest management, and the impact of volatile organic compounds (VOCs) on pest detection. These findings will contribute to academic research, inform future studies, and support evidence-based decision-making in the field of pest management.
- **VOC-based pest detection concept**: The project aims to advance the concept of detecting pests based on volatile organic compounds (VOCs). The methodology and findings related to VOC detection can be further refined and applied in pest management practices, contributing to more efficient and sustainable pest control strategies.
- **VOC database and machine learning algorithms**: The project involves the collection and analysis of VOC data from various pest-infested plants. The resulting VOC database, along with machine learning algorithms, can be further utilized to enhance pest detection and monitoring systems.
- **Prototypes and technologies**: PurPest aims to develop and showcase prototypes of innovative technologies for pest detection, such as sensor devices or monitoring systems. These prototypes can be further developed and refined for commercialization, potentially leading to the production of market-ready pest management tools.
- **Recommendations and guidelines**: The project will produce recommendations resulting in a *whitepaper*, a report addressed to regulatory bodies providing information and valuable guidelines based on the project's research findings and practical experience. These recommendations can be utilized by stakeholders in the agricultural industry, policymakers, and other relevant entities to improve pest management practices and promote sustainable agriculture.

It is important to note that the specific exploitable results of the PurPest project may vary based on the progress and outcomes of the research activities.

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Table 6- WP6 measures for exploitable results (C&D – Communication and Dissemination; E – Exploitation)

<table>
<tr><th>Exploitable results</th><th>WP6 measures - C&D</th><th>WP6 measures - E</th></tr>
<tr><td rowspan="3">• A sensor concept that can be commonly adopted to systematically detect and prevent entry and spread of serious plant pests
• A dataset of pest specific VOCs emitted by plants attacked by different pest species, genera or groups
• Six sensor system prototypes that are tested in relevant environments to detect one or several of the chosen target pests at the borders and in the field
• Report on socio-economic and ecological impacts
• Recommendation of pest management measures and plant health policies to increase adaptation of effective detection methods acceptable to plant health authorities, importers, plant producers, farmers and foresters</td><td>C&D to the scientific community through:
• Personal and professional networks in social media
• Project website
• Websites from the partner institutes
• Connecting to CORDIS, EIP-Agri EU horizon magazine – EU CAP Network
• Presenting results at national and international conferences
• Publishing in peer-reviewed scientific journals
• Digital newsletters with updates sent across network</td><td>Scientific development:
• Database of VOCs can be used in future studies on plant-pest-beneficial interactions
• The VOC data can be used to detect pest species different from target pests chosen in PurPest
• Use of the ECs Horizon results platform</td></tr>
<tr><td></td><td>Technology valorization:
• Spark further improvement of sensitivity and specificity of currently available sensors
• Extending SSPs to other pests
• New market opens for sensors in agriculture forestry</td></tr>
<tr><td>C&D to the general public and stakeholders:
• Organizing field days and project campaigns
• Short YouTube videos on VOC collection and sensor use
• Popular science articles</td><td>Legal incentive:
• Round table with EU representatives to draft new or improve current policies on pest import control
• Enhance current policy adaptation by facilitating plant pest detection</td></tr>
</table>

5.3. Research data and IPR Management

Prior to dissemination of results, it is essential to consider its protection via patent application or as confidential know-how. PurPest will generate results of strong scientific interest but also with real potential for commercial exploitation. The management of the ensuing intellectual property rights (IPR) in PurPest, including ownership, protection and publication of knowledge, access rights to knowledge and pre-existing know-how as well as questions of confidentiality, liability, and dispute settlement are outlined and agreed upon in the Consortium Agreement (CA). The CA is signed by all the parties to specify the terms and conditions pertaining to ownership, access rights, exploitation of background and results and dissemination of results, in compliance with the grant agreement and Regulation n°1290/2013 of 11/12/2013. The CA is based on DESCA Horizon

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2020 Model Consortium Agreement with the necessary adaptations considering the specific context and the parties involved in the project. The basic principles include:

- the parties will exhaustively identify the background intellectual property brought to the project, and assess its availability for access rights as regards potential third parties' rights over such background;
- ownership of results, including joint results generated by several parties, will go to the parties having generated such results;
- the owning parties will take all appropriate measures for the protection of the results capable of commercial or industrial exploitation, notably through intellectual property rights when relevant;
- the parties will use their best efforts to exploit and disseminate the results, either directly or indirectly, for instance by out-licensing said results; and
- each party will give access rights to their background and results to other parties for implementation of the project and/or for the exploitation of those other parties' own results (under fair and reasonable conditions). SINTEF will organize a briefing for all members on IP management, knowledge protection and procedures.

IPR strategy. The partners' technical background is a good ground for new IP protections. The need for IP protection of project results will be continuously evaluated according to Horizon2020 guidelines (European Commission, 2022) and reported in WP6 - D6.5 Report on the dissemination and communication activities (Table 7).

The IP milestones. The initiation of patent protection may be started by the partners in question during the project. This may be especially relevant for new application technologies like SURMOF coatings, SERS design and electronic nose development.

Table 7- Exploitation potential, Partner Institution roles and intellectual property rights (IPRs) protection.

Partner Institution Role	Expected results	Protection of IPR	Exploitation route
NIBIO - Chemical ecology, pest biology and crop health management	Competence within chemical ecology, pest and pathogen management	P&PA	Strengthen cooperation with industry. New projects to develop the competence further into similar research fields.
SINTEF – Silicon Sensor processes and coating development	Functional coatings providing high selectivity in new sensors. SERS substrates for selective detection of VOCs. SERS on Waveguide for lower detection limit.	P&PA	New projects. Cooperation with industry; partners for potential licensing of the created IP.
NTNU – Chemical sensory systems in insects	Cross disciplinary advancement in understanding chemical plant/pest communication systems	P	Strengthen cooperation with industry, new projects to develop competence further into similar fields
JKI - Chemical ecology, crop health management	Extending the use of VOCs for plant protection, integration of plant chemistry with sensor technology and IPM	P	Collaboration with industrial partners for potential licensing. Possibility of spin-off
SAFTRA - PickMol™ technology	Advancement of our PickMol™ technology for compatibility for detection of VOSs in air	PA; Trademarks	Exhibit results in conferences on sensors applied in agriculture, food security

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UWAR - patents on BAW devices for VOC and particle sensing.	Expanding the use of their BAW sensor technology to pest control, develop new polymer coatings for pest VOCs, create new AI algorithms for better selectivity and sensitivity	P& PA	New projects to develop competence into similar fields. Collaboration and new patents with e-nose companies (e.g. Volatile AI) and also BAW companies (e.g. Flusso Ltd).
PLI – Import regulations and control of plant material	Facilitate the current pest detection methods during import	P	Link with end-users and consumers
UNIPD – Chemical ecology and insect pest management	Expanding expertise in chemical ecology, site-specific plant protection approaches and chemical analysis methods. Advanced tools and equipment. Increase expertise in chemical plant communication systems	P & PA	Collaborations with partners beyond project
INIAV – Nematode biology, detection and control	Extending their expertise in VOC emission studies and enhancing their PWN early detection ability	P	New projects to develop competence further into similar research fields
MENDELU – *Phytophthora* spp. biology, cultivation and control	Exploiting VOC emission for detecting PhR and related pathogens and understanding the role of chemical communication in oomycetes	P	Strengthen cooperation with industry and stakeholders. New projects to develop competence further into similar fields
VOL – Targeted chemical monitoring solution combining gas sensing with AI.	Improved sensor platform with expanded sensor acceptance and advancement of machine learning.	PA; Trademarks	Participation in research projects with similar goals
AIRMO – Supplier of gas chromatographers	Portable GC with new sensor technology and higher sensitivity, selectivity and lower detection limit.	PA; Trademarks	Cooperation with industry; partners for potential licensing of the created IP.
WU – Socio-economy evaluation of innovations in agriculture	Increased knowledge about the benefits and costs of invasive species control resulting in better policies at EU and member state level supported by stakeholders	P	Cooperation with industry; partners for potential licensing of the created IP.
UNINE – Pest insect biology and management and chemical ecology	Extending their expertise on the specificity and application of plant- produced VOC emissions. Transferring such knowledge to application in agriculture.	P & PA	Strengthen cooperation with industry. New projects to develop the competence further into similar research fields.
DGAV – Import control policies	Improving effectivity and sensitivity of pest detection	P	New projects to develop the competence further into similar research fields.
CNP – Stakeholder interests	Supporting the pine-based sector by implementing new sensing devices for PWN detection and management	P	Strengthen cooperation with industry. New projects to develop the competence further into similar research fields.
UNIEV – Expertise in VOC analysis via GC- MS	Enhancing their ability expertise in of TD-GC studies and data analysis	P	New projects to develop competence further into similar fields
WBF – Ecological impact analysis	Increased knowledge on the ecological impact of 5 plant pests and potential mitigation measures	P & PA	Strengthen cooperation with industry. New projects to develop competence further into similar fields

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5.4. Scientific Development

The scientific development has exploitable potential as it offers innovative approaches, practical tools, and technologies for accurate and timely identification of pest infestations. Through extensive research and experimentation, PurPest will uncover the specific VOC profiles associated with the five target plant pests. This research is important in addressing knowledge gaps in existing research and developing databases and machine learning algorithms to identify and monitor pest populations more effectively. Furthermore, PurPest focuses on creating sensor devices, monitoring systems, and other cutting-edge tools that can accurately and efficiently detect and monitor pests. These research outcomes contribute to academic research, inform future studies, and support evidence-based decision-making in the field of pest management. The knowledge, principles, and technologies accumulated through PurPest could also be applied to a wider and more diverse spectrum of plants and pests, encouraging further research and advancements in the field.

5.5. Technology Valorisation

By identifying, evaluating, protecting, and exploiting technological developments, PurPest aims to add economic, social, or environmental value. With the support of partners, potential market opportunities and applications for the developed technologies and methodologies can be identified and assessed.

In collaboration with industry partners, PurPest developed prototypes of sensor and monitoring systems, can be further refined for commercialization in a tailored manner, potentially leading to the production of market-ready pest management tools.

5.6. Legal incentive

PurPest will assess the potential damage of a no-control scenario (baseline scenario) and identify the additional benefits that controlling the five targeted pests will provide using PurPest's pest detection capabilities. Based on the results, the EU invasive species policies for the five pests under investigation will be evaluated for possibilities of improvement by incorporating VOC detection. The resulting policy changes will be assessed through a survey among nursery owners and stakeholder workshops, which will include representatives from the competent authorities of the member states, border control agents, and others involved in designing and implementing invasive species control policies. The goal is to gather their views on different control policies.

As a result, policy recommendations for pest management measures and plant health will be drafted and delivered as a part of a WP6 Deliverable 6.4. These recommendations aim to increase the adoption of effective detection methods that are acceptable to plant health authorities, importers, plant producers, farmers, and foresters.

6. WP Management

Work Package 6 is dedicated to the communication, dissemination and exploitation of PurPest’s concepts and results. This WP lasts throughout the project’s duration and intends to promote the outputs of PurPest, e.g., the pest-specific VOC sensors and the pathway to their development and validation; promote a low pesticide input for sustainable agriculture and forestry by preventing entry of quarantine and priority pests; exploit the results to a wide range of end users (from European and national policymakers and administrators to scientists, practitioners and activists, and the general public); cooperate with similar actions to have a global connection with countries affected or threatened by pests studied; and finally to support relevant EU and Associated Countries' plant health policies by clear science-based messages. Work Package 6 is led by partner INIAV that oversees all PurPest partners’ contributions. INIAV is responsible for the timely achievement of WP6 milestones and objectives, and for reporting their success to the coordinator.

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6.1. Participants, their roles, and effective collaboration

For management of WP6, INIAV counts with the collaboration of each of PurPest's partners. INIAV makes sure that the project's task run smoothly by actively requesting inputs from each partner at the established timetable. WP6 management will be eased through the use of the online SharePoint hub hosted by SINTEF. SharePoint site plays a vital role as the online platform for effective working and collaboration within the PurPest project. It provides secure and exclusive access for project participants, ensuring confidentiality and privacy of project-related information. With its access control features, such as the ability to establish folders and sub-sites with stricter access permissions, the SharePoint site offers a higher level of security and control compared to the main site. This ensures that all PurPest contributors can collaborate in a safe and productive manner, facilitating efficient communication and seamless coordination throughout the project.

6.2. Scheduled Communication and Dissemination Activities

Communication and dissemination activities, milestones and deliverables are scheduled in advance to ensure effective communication and wide dissemination of relevant information (Table 8). WP6 activities will begin in M1 and last to the end of the project, encompassing, specifically, designing a Communication, Dissemination and Exploitation Plan (T.6.1 led by INIAV, from M1 to M48), to spread the message across different technical, conservation, scientific, decision-making and policy sectors; establishing an international cooperation network to connect and network with EU funded projects and global initiatives within the Destination "Fair, healthy and environment-friendly food systems from primary production to consumption"(T.6.2 led by NIBIO, from M1 to M48); promoting communication actions (T.6.3 led by INIAV, from M2 to M48); managing dissemination and technology transfer (T.6.4 led by NIBIO, from M12 to M48); outlining the socio-economic barriers and the recommendations for policies of sustainable pest management (T.6.5 led by WU, from M12 to M48). The organization of a webinar with all stakeholders is the milestone for WP6 to be held at M42. Deliverables are presented in Table 9.

Table 8- The timing of WP6

WP6	Start	End
T6.1 – Communication, Dissemination, and Exploitation plan	M1	M48
T6.2 – International cooperation network	M1	M48
T6.3 – Communication actions	M1	M48
T6.4 – Dissemination and technology transfer	M12	M48
T6.5 – Socio-economic barriers and policy	M12	M48

Table 9- Deliverables for WP6.

Code	Deliverable
D6.1	Project Website.
D6.2	Detailed Plan for dissemination and exploitation including communication activities.
D6.3	Report on the project interface with other global initiatives.
D6.4	White paper (Policy recommendations).
D6.5	Report on the dissemination and communication activities.

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6.3. Monitoring and Evaluation

The successful implementation of the Dissemination and Communication Plan will be measured by the achievement of specific targets for key performance indicators (KPIs). The main objective of monitoring the dissemination and communication strategy is to ensure that the objectives of PurPest are met. It is important to conduct this evaluation on a continuous basis to determine the effectiveness of the strategy. The monitoring process involves measuring indicators, both quantitative and qualitative, for each activity (Table 10).

Monitoring and evaluation will be incorporated on the website and Social Media marketing and communication processes, as a source of essential information for monitoring key indicators. All the impacts will be compiled in the Deliverable 6.5 Report on the dissemination and communication activities.

Table 10- Key Performance Indicators (KPIs) and targets for the Project

Type of engagement	Metrics	Target number	Notes
Brochure (digital)	# of downloads	250	
Website	# of visitors per year	1000	an average of 2.5 minutes stay
	# of countries' visitors	27	
	# of posts in website "News" section	12	
X (Twitter)	# of posts	20	
	# of followers	150	
LinkedIn	# of posts	20	
	# of followers	200	
YouTube	# of videos	5	
Press releases	# of press releases	10	
Articles in scientific journal	# accepted	14	
Educational material	# published	8	
Newsletter	# published	10	
Video News Release	# created	2	
Flyers	# distributed	500	100 copies x 5
Workshops	# of participants	80	through 5 events

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Reporting and evaluation	# reports submitted	20	
Organizing field days and project campaigns to demonstrate prototype	# of participants	100	through 6 events
VOCs database	# plant-pest-environment combinations	20	
Policy recommendations	# of whitepaper	1	for the control of all 5 target pests

6.4. Ethical Considerations and data privacy

The PurPest project recognizes the need to uphold ethical standards and protect the privacy of individuals and data involved. As stated, the management of intellectual property rights (IPR), including ownership, protection, and publication of knowledge, access rights to knowledge and pre-existing know-how, as well as issues of confidentiality, liability, and dispute settlement, are outlined and agreed upon in the Consortium Agreement (CA). All partners will comply with the ethical principles and the applicable EU, international, and national laws regarding the ethical issues identified in the Ethics summary report, and any additional ethics issues that may arise during the grant will be addressed and ensured. The partners are aware of the guidance provided in the EC's Ethics Self-Assessment Guidelines and will rigorously follow them.

Throughout the project, ethical standards and guidelines of Horizon2020 will be rigorously applied, regardless of the country where the research is carried out. Appropriate health, safety and environmental (HSE) procedures conforming to local/national guidelines/ legislation, as well as the protection of personal data under GDPR (European Commission, 2016) will be followed for the staff involved in PurPest. Data will only be collected with prior consent from the people involved and only used for as long as consent is given. Under no circumstances will data containing personal information be publicly shared without the subject's explicit consent.

Ethical aspects related to data collection, generation and sharing have been considered and nothing in this project shall be deemed to require a party to breach any mandatory statutory law under which the party is operating. This includes any national or European regulations, as well as rules and norms regarding ethics in conducting research.

Regarding protection of personal data, WU will conduct stakeholder surveys. Personal data will be anonymized, and survey participation will be on a voluntary basis. Participants will be asked for participation prior to conducting the survey. The anonymized data will be made available for export according to the FAIR principles. Hence, no personal data will be exported to/from the EU from/to non-EU countries during the project. Stakeholder interviews will be held, and stakeholders will be involved in workshops in WP5 and WP6, implying handling of personal data.

The coordinator of the PURPEST project, NIBIO and all consortium members, follow ethical guidelines in their work, and all work is subject to the appointed Ethics Representative to the PurPest project; Anna Bakowska (see Deliverable 8.1). In the data management plan, compiled by NIBIO in Deliverable 7.2 the ethical considerations relevant to the project are listed.

For host institutions, a detailed data protection policy for the project will be described. Partners will explain how the data are relevant and limited to the purposes of the PurPest (according to 'data minimization' principle). A description of the technical and organizational measures that will be implemented to safeguard the rights and freedoms of the data subjects/research participants will be provided.

The PurPest project also considers potential societal or environmental impacts that may arise from its communication, dissemination, and exploitation activities, ensuring they are conducted ethically, respecting the rights and privacy of individuals, and contributing to the responsible, sustainable, and conscientious

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advancement of knowledge. UNIPD, WU, MENDELU and UWAR have implemented Gender Equality Plan (GEP), while the other partners have initiated development of a GEP aligned to the requirements of the eligibility criteria in the Horizon Europe work program, as well as the Norwegian Equality and Anti-discrimination Act. All consortium partners welcome the requirement for a GEP proposed by the European Commission and share the sense of urgency in achieving gender balance in research and innovation activities. This is key to creating the innovations needed to solve the complex challenges facing our society. The GEP will not be a static document to be reported on annually, but a dynamic and useful set of guidelines, tools and KPIs that will make gender equality work as a natural part of our day-to-day management, research, and innovation activities.

7. Conclusion

The D6.2 - Communication, Dissemination and Exploitation Plan of the PurPest project underlines the importance of effective communication, widespread dissemination, and successful exploitation of project results. It provides a visual introduction to the project and can serve as a general guideline on how, when, to whom, and where to communicate about the project. Within the project various stakeholders will be engaged, including the scientific community, industry partners, policymakers, and the general public, to maximize the impact and value of research outcomes.

This Plan promotes tailored communication strategies, targeted dissemination activities, and technology transfer to ensure that the project's innovations reach the intended audiences. The project's findings will be promoted through diverse communication channels, including publications, workshops, conferences, and digital platforms. Furthermore, the plan recognizes the need to protect intellectual property rights, ensure ethical considerations, and comply with data privacy regulations. It highlights the importance of responsible research practices, sustainable approaches, and adherence to legal and ethical standards throughout the project.

Overall, the Communication, Dissemination, and Exploitation Plan of the PurPest project aims to maximize the visibility, impact, and utilization of the project's results, while fostering collaboration, knowledge exchange, and the advancement of pest management practices. All partners are encouraged to actively promote and disseminate the project's outcomes to a wide range of audiences.

8. References

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