

Issue 1

2025



PHENET

PHENOTYPING & ENVIROTYPING
SOLUTIONS FOR AGROECOLOGY

Blooming in the Apple Plot at Laimburg Research Centre



In this newsletter...

PHENET in numbers – learn more about PHENET's impact

Use-case spotlight – How bumblebees and imaging make a difference

Upcoming PHENET events – Join us at upcoming events across Europe

NEWSLETTER PHENET

What's New in PHENET:
Innovations, Collaborations, and Impact!

Welcome to the first PHENET Newsletter!

Why PHENET?

European agroecosystems face serious threats from climate change, soil degradation, and biodiversity loss—putting ecosystem health, food security, and human well-being at risk. PHENET aims to guide these systems toward greater resilience and sustainability.

We develop and test innovative tools like AI-based plant, soil, and biodiversity sensors, along with satellite imaging to monitor environmental impacts. PHENET also harnesses big data and next-gen predictive models for envirotyping and phenotyping.

Launched in January 2023, PHENET is a five-year European project involving 29 partners across academia, farmer networks, and industry. It supports and enhances four major European Research Infrastructures: [EMPHASIS](#), [AnaEE](#), [eLTER](#), and [ELIXIR](#).

As we reach the project's midpoint, we share progress and outcomes in this first newsletter. This issue highlights two use cases—ecosystem and crop health—demonstrating how integrated data and technology enable sustainable agriculture. You'll also find updates on our participation at SEB Antwerp and EPPS 2025 in Bonn, and some PHENET stats: growing social media reach, increased Zenodo downloads, and strong webinar engagement.

Our biannual newsletter, [website](#), and our [LinkedIn](#) page will keep you updated—stay tuned!

— Bertrand Muller, PHENET coordinator



PHENET team at the 2nd Annual Meeting in Lisbon, Portugal, 2025



PHENET in Numbers

29 partners
from 11
countries (9
EU states)

First policy
brief
downloaded
145 times

More than
620
followers on
LinkedIn

More
than 20
webinars

29 Zenodo
publications
downloaded
350 times

PHENET tests methods and tools across 9 use-cases covering a wide range of envirotyping and phenotyping technology usages.

PHENET will be present with a booth at the [European Plant Phenomics Symposium \(EPPS\)](#) in Bonn in September 2025. The booth will feature live demos, partner and use-case videos, and fun activities.

PHENET will coordinate a dedicated session at the [Society for Experimental Biology \(SEB\)](#) Annual Conference in Antwerp, Belgium in July 2025. The session is called “**Plant phenomics: beyond the platforms**”. Four talks will showcase PHENET activities.



Use-Case Spotlight

Bumblebees as bio-indicators for landscape quality

Ecosystem threats demand reliable bioindicators—PHENET tests bumblebees to trace landscape-level stressors.

The Helmholtz Centre for Environmental Research – UFZ set up a prototype using instrumented (commercially available) bumblebee colonies to investigate whether the complex reactions of these insects to different environmental stresses can serve as indicators of pollinator well-being under both field and experimental conditions.

Mark Frenzel: mark.frenzel@ufz.de



Bumblebees equipped with multiple sensors enable acquisition of real time data for the assessment of landscape quality.



New imaging tools help to assess biotic stress in wheat

Fusarium Head Blight: A major threat to European wheat production

CRA-W, GEVES, and Agroscope are leading the development of transferable, scalable disease quantification tools—laying the groundwork for real-time monitoring solutions across crop types and platforms.



This plant health use-case focuses on validating advanced sensors and imaging methodologies to detect biotic stress in wheat, particularly *Fusarium Head Blight* (FHB).

This use-case builds on work from the H2020 [INVITE](#) project, which concluded with a joint conference with [INNOVAR](#) in Brussels in November 2024.

Throughout 2024 and 2025, the research team has acquired and annotated RGB, multispectral, and fluorescence images of FHB-infected wheat using diverse tools—from smartphones to hyperspectral tractor-mounted systems. These data support the development of deep learning models and intuitive user interfaces for field diagnostics. Fluorescence imaging under natural infection conditions is being tested to harmonize results across sites and seasons.

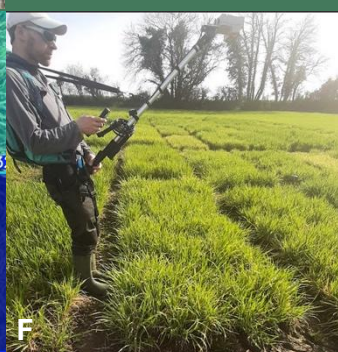
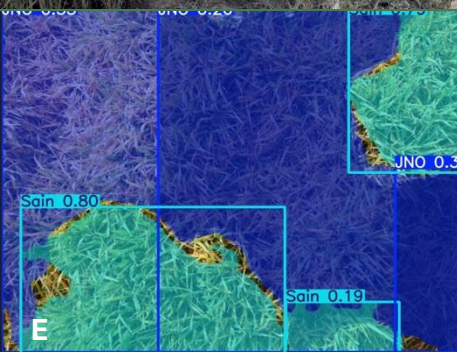
In parallel, adapting these approaches to detect other diseases is in progress, including *Barley Yellow Dwarf Virus* (BYDV), by developing AI-based phenotyping tools that reduce reliance on visual scoring—an important step in variety testing and registration.



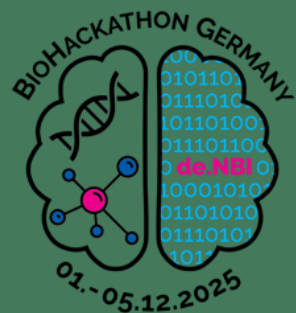
Philippe VERMEULEN: p.vermeulen@cra.wallonie.be; Valérie CADOT: valerie.cadot@geves.fr; Juan HERRERA: juan.herrera@agroscope.admin.ch

Images show assessment of *FHB* and *BYDV* infection in the field using RGB imaging and machine-learning algorithms.

A: RGB image of *FHB* on wheat, combined with deep learning model; B: handheld fluorometer using quantum yield index; C: multispectral VIS-NIR imaging combined with a machine learning model; D: hyperspectral NIR imaging on a tractor platform combined with machine learning model; E: prediction of *BYDV*-infected areas by deep learning; F & G: RGB acquisition with the Literal stick; H: annotation of healthy and *BYDV*-infected areas.



News from the community



BioHackathon Germany Meets PHENET

Forschungszentrum Jülich (FZJ) is organizing the BioHackathon Germany and will offer one or two exclusive

slots (depending on interest) for PHENET Hackathon projects.

If you are interested in proposing a project or joining one, don't miss this unique chance to connect with the wider bioinformatics and phenotyping community!

Submit your proposal (max. 500 words), clearly defining your team, objectives, and how your project aligns with PHENET's mission, to contact@denbi.de by **July 15, 2025**.

Daniel Wibberg: d.wibberg@fz-juelich.de



EPPS

EUROPEAN PLANT PHENOMICS SYMPOSIUM

Abstract Submission – European Plant Phenomics Symposium

The deadline to submit your abstract for the European Plant Phenomics Symposium is June 30, 2025.

Submit here:

<https://express.converia.de/frontend/index.php?sub=1788>



EPPS

EUROPEAN PLANT PHENOMICS SYMPOSIUM

EPPS Training School – Application Deadline Approaching!

Are you or someone you know an early career scientist interested in plant phenotyping?

The EPPS Training School is a great opportunity to gain hands-on experience.

Application deadline: June 30, 2025!



eLTER Science Conference PHENET contibution

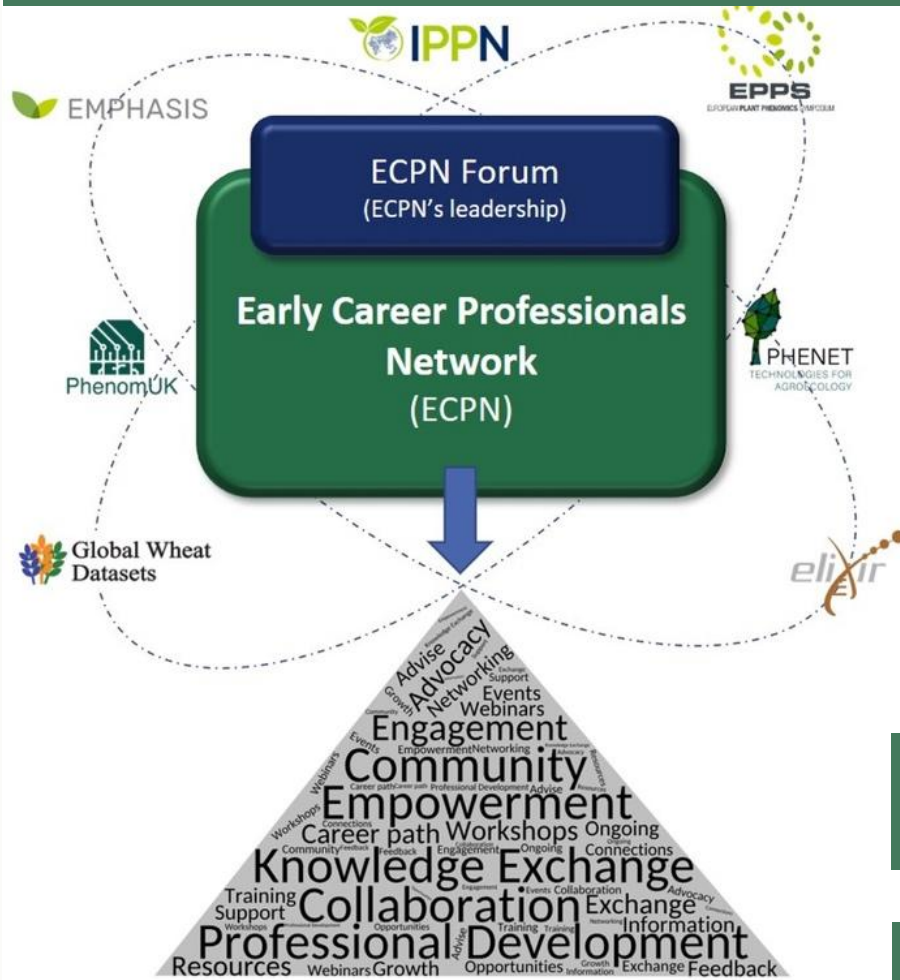
Madhuri Paul (University of Bonn) will present preliminary results from a meta-analysis on intercropping in Europe at the upcoming **eLTER Science Conference**.

This presentation highlights the integration of PHENET into broader long-term ecosystem research.

Conference abstract:

<https://aca.pensoft.net/article/152342>

Community Engagement



ECPN is supported by IPPN, EMPHASIS, ELIXIR, DPPN/EPPS, Global Wheat Datasets, PHENET, and PhenomUK, and targets PhD students, postdocs, and early-stage professionals worldwide.

Don't miss this unique opportunity to connect, learn, and shape the future of phenomics!

The Future of Phenomics: The Early Career Professionals Network (ECPN) launches at EPPS

[The European Plant Phenomics Symposium](#) (EPPS) 2025 in Bonn (September 16–19) will mark the official launch of the [Early Career Professionals Network \(ECPN\)](#) on September 18. The ECPN aims to empower the next generation of plant phenomics leaders by fostering collaboration, exchange, and career development.

The event will feature:

1. ECPN Forum Introduction – presenting the network's vision, structure, and business plan.
2. Senior experts from academia and industry, highlighting challenges and career paths for ECPs.
3. Flash Presentations – short, high-impact talks from ECPs showcasing innovative research.

Meet the Research Infrastructures in PHENET: AnaEE-ERIC – Advancing Cross-RI Services

In this issue, we feature AnaEE-ERIC

AnaEE-ERIC is actively contributing to PHENET by identifying transferable technologies, tools, and methods from PHENET that could evolve into sustainable services across research infrastructures (RIs). Through cross-use case analyses and engagement with research infrastructures, work packages, and use-case leaders, AnaEE is shaping service concepts related to long-term ecosystem monitoring, soil health, and data integration. This process supports FAIR principles, inter-RI collaboration, and future service co-creation.



[Thi Ly Mai](#) is a dedicated postdoctoral researcher and joined the team in 2025 to accelerate this effort and foster synergies for agroecological transition.

Opportunities to Access Research Facilities:

Transnational and Virtual Access

AgroServ

AgroServ Has Launched Its 4th Call!

AgroServ is a Horizon Europe project funded by the European Union

AgroServ is thrilled to announce the launch of the **4th Transnational and Virtual Access Call** (TNA/VA).

This call offers free TNA/VA access to more than 143 cutting-edge research services in the transdisciplinary field of agroecology — available to researchers, industry professionals, and practitioners worldwide.

Submission deadline: 15 October 2025

The Catalogue of Services includes access to a wide range of infrastructures and expertise, including platforms focused on phenotyping.

Learn more and apply!

<https://agroserv.eu/blog/4thCall>

For questions, contact:

Daniele Baldo daniele.baldo@anaee.eu
Heba Ibrahim: h.ibrahim@fz-juelich.de



Microbes4Climate

Microbes4Climate – 1st TNA Call!

Deadline: 30 June 2025

Microbes4Climate is a Horizon Europe project funded by the European Union.

This call offers free access to top-class facilities and services across 23 international partners — supporting researchers and professionals working on climate-related microbial studies.

The Catalogue of Services includes access to 140+ service, including :

- Unique microbial collections
- Advanced laboratories and instruments
- Support for biodiversity, biotechnology, and environmental applications
- Physical, remote, and virtual access

Learn more and apply now!

<https://microbes4climate.eu/tna>

If you have any questions, contact:

accessofficer@microbes4climate.eu

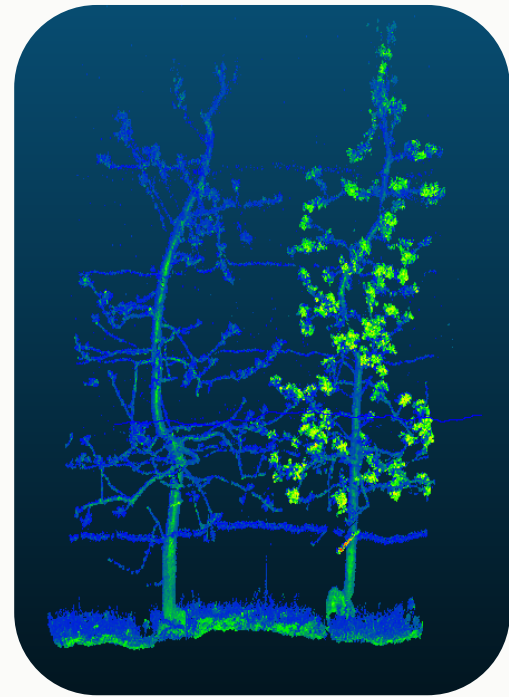


Showcasing Our Impact: Media Highlights & Publications



PHENET Policy Brief - Unlocking the Value of Phenotyping Data

PHENET's first **policy brief** explores how advanced plant phenotyping can inform climate-resilient agriculture and drive sustainable food systems. It outlines key challenges around data standardization, access, and reuse, and provides actionable recommendations to promote FAIR data principles across Research Infrastructures.



A 3D model of two different apple genotypes obtained with the LIDAR mounted on the phenomobile!

Coffee Session Webinars

The PHENET Coffee Session webinars introduced the research infrastructures involved in the project, showcasing their services, technologies, and opportunities for collaboration. These informal sessions aim to raise awareness, foster synergies, and support capacity building across the network.

Enjoy our [Coffee sessions](#)



Use-Case Spotlight Webinars

These webinars highlighted the innovations, goals, and early results from PHENET's use-cases. Each session focused on a specific challenge, demonstrating how advanced phenotyping, envirotyping, and data integration approaches are applied in real research scenarios.

Click the visual to stream our entire webinar collection!



PHENET Use Case webinar series 2024

by IPPN - International Plant Phenotyping Network

Playlist • 20 videos • 216 views

"PHENET - Tools and methods for extended plant PHENotyping and EnviroTyping services of Europe...more

▶ Play all



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Our [Zenodo Community](#)



[Let's-Innovate-Together](#)



Thank you to all contributors and partners!
Stay tuned for our 2nd issue contributions: December 2025!

Have a question?
Contact Us: h.ibrahim@fz-juelich.de | s.fahrner@fz-juelich.de