European Plant Phenotyping Network

EPPN 2020

D5.3: Deliverable: Report about outreach activities

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Executive Summary

Objectives and Rationale

EPPN2020 aims at raising awareness on the opportunity for European public and private sectors about (i) transnational Access to plant phenotyping installations, techniques and methods, (ii) methodological progress achieved in Joint Research Activities (JRAs) on sensorics (sensors and imaging), statistical procedures and data management, for increasing the quality of phenotyping activities within the EPPN2020 partnership and beyond it. To specifically address a wide range of users and raise awareness about EPPN2020, the project partners used a set of instrument such as websites, social media, advertising material such as printed and digital flyers, user meetings, conferences, training etc. EPPN2020 addresses a large number of scientific and technological questions from a range of plant science disciplines. In order to attract new users the EPPN2020 consortium has aimed at giving as wide a publicity and information as possible on the Transnational Access program.

Main Results:

EPPN2020 used web based communication tools such as the project website, social media, which allowed to reach users from many different communities and were highly frequented throughout the duration of the project. User meetings, participation at conferences, workshop of different user communities was essential to raise awareness, discuss the need of plant phenotyping within different communities and to disseminate best case examples from Transnational Access and Joint Research Activities. Former users of transnational accesses are fellows of EPPN2020, they are invited in all training activities and participate to the networking activities. A particular attention is given to information about EMPHASIS, which will develop a long term perspective for enabling of user access to European plant phenotyping facilities as well as other services and resources as such enabling the continuation and further development of the results obtained within EPPN2020.

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1. OUTREACH ACTIVITIES

The outreach within EPPN2020 aims at raising awareness about the opportunity for European public and private sectors about (i) transnational Access to plant phenotyping installations, techniques and methods, (ii) methodological progress achieved in Joint Research Activities (JRAs) on sensorics (sensors and imaging), statistical procedures and data management, for increasing the quality of phenotyping activities within the EPPN2020 partnership and beyond it. To specifically address a wide range of users and raise awareness about EPPN2020, the project partners used a set of instrument such as websites, social media, advertising material such as printed and digital flyers, user meetings, conferences, training etc. An important element was the use of synergies with other initiatives such as the International Plant Phenotyping Network (IPPN), COST Action (FA COST Action FA1306), European networks such as European Plant Science Organisation (EPSO), the national plant phenotyping infrastructures (DPPN, Phenome-Emphasis.fr, APPN, Phen-Italy, Phenom-UK and others) and particularly the ESFRI infrastructure EMPHASIS that will enable long term continuation and utilisation of the results from EPPN2020 and its further development. A substantial number of EPPN2020 project partners as well as Transnational Access beneficiaries (Fellows) were actively involved in outreach activities

1.1. Web based tools

The EPPN2020 web-based portal (https://eppn2020.plant-phenotyping.eu/) is an essential part of the raising awareness about EPPN2020 activities as well as networking efforts to inform about the project progress in JRAs activities and the Transnational Access opportunity to EPPN2020 installations. It was established at the beginning of the project and continuously updated and improved based on the interaction with the project partners and the user community. The website enables effective communication including: i) the description of the project, its objectives, structure and partners, ii) calls for Transnational Access, application guidelines, installation data base listing facilities available for access as well as their major characteristics and the contact details of the access providers, data policy etc. iii) main results in JRAs and possibility to upload software elements designed in JRAs, (iv) announcement of meetings, summer schools, workshops, etc. v) collection of phenotyping protocols, guidelines, deliverables, publications from EPPN/EPPN2020 projects. Over 60.000 visitors looked for information on the EPPN2020 website in each project reporting period with one third of the visitors spending more than 3 minutes on the website, additionally, there were nearly 4.000 downloads of existing material. About 56% of visitors were from Europe, 34% visitors from the USA, 10% others. (For more details, see Deliverable 5.1).

The web-based portal includes the management of the Transnational Access process. In short, i) users interested in access select the installation of interest on the infrastructure database and contact the responsible scientists at these installations to discuss their experiments and to elaborate the feasibility of the experiment; ii) user submits the application to the on-line submission platform prior to a deadline and the access provider checks the application to confirm the feasibility; iii) reviewers are contacted, obtain access to the platform and score the application, iv) users with highest scores approved by the EPPN2020 Executive Committee obtain access, v) after finalizing the Transnational Access experiment users submit a report with a description of the performed work, complemented by a short survey about the performed

experiment and the quality of access. The reporting includes a video reporting opportunity and users may upload a short video describing the access experiment. The platform is also used to archive all the documents related to every single Transnational Access experiment. Finally, the summary of each finalized experiment is then published on the website and all related publications. (For detail see Deliverable 4.1, Deliverable 4.4a&b, Deliverable 5.1).

In summary, the web based platform represented a key element to address a huge number of users and provide all relevant information about the project and particularly the Transnational Access opportunity. It is has become an important tool for information within the plant phenotyping community beyond Europe and many of the established and successful tools will be further used within the ESFRI project EMPHASIS beyond the duration of EPPN2020. Particularly, the web-based Transnational Access management platform includes a pipeline for management of applications that allow an interaction between users and access providers to submit a feasible application, an independent review procedure and reporting section with a questionnaire on the access quality. It may be adapted for access and service provision within the ESFRI project EMPHASIS and has the potential to be adapted and used for access management in other research infrastructure projects providing access to services.

1.2. Social media

The use of social media in EPPN2020 focuses on the cooperation of other plant phenotyping projects and initiatives with well-established social media strategy a substantial number of active subscribers rather than setting up EPPN2020 specific social media approach with respective tools and accounts. EPPN2020 calls for Transnational Access were as such widely distributed by: i) using Twitter and LinkedIn accounts from EMPHASIS and IPPN, ii) utilizing well established newsletter with many existing subscribers addressing plant phenotyping (EMPHASIS, IPPN, NordPlant) plant science at large (EPSO, EPS), life science (CORBEL), environmental science (ENVRI-Plus) data management (EOSC-Life) as well as the news platforms of many national initiatives.

In summary, EPPN2020 effectively used synergies with the well-established user base of other projects and initiatives relevant for plant phenotyping and plant science at large and as such reach a wide range of different user communities right from the beginning of the projects making EPPN2020 as well as the Transnational Access opportunity widely visible.

1.3. User meetings

EPPN2020 addressed a range of user meetings at different levels to link existing and new phenotyping platforms, users from academia and industry. Special attention in organizing user events was put on EPPN2020 using synergies with national infrastructure programmes (Phenome-EMPHASIS.fr (France), DPPN (Germany), PhenomUK (UK), APPN (Austria), Phen-Italy (Italy), CzPPN (Czech Republic) etc.) with the ESFRI infrastructure project EMPHASIS, the COST Action (FA COST Action FA1306) as a plant phenotyping communication and interaction platform in Europe as

well as with international association IPPN to develop interest and knowledge about state-of-the-art plant phenotyping.

Specifically EPPN2020 addressed:

- Workshops with technology developers: to facilitate and define potential for: i) novel sensors and approaches for phenotyping to optimize and extend the pool of measurable plant traits; ii) adaptation and standardization of novel plant trait-oriented assays, and iii) protocols and procedures for data storage and exchange.
- Engagement of different plant science communities at specific workshops or conferences such as model plant community, ecology, horticulture, root science, viticulture, etc. to specifically discuss about the needs of plant phenotyping within these communities and advertise the Transnational Access opportunity.
- Round table meetings: events at international meetings, conferences or workshops to discuss, set and distribute best phenotyping practices, standards and protocols.
- Training schools: addressing training in relevant areas of interest such as machine learning or experimental design
- Finally, because of cancelations of a number of events caused by the COVID-19 pandemic, EPPN2020 is organizing together with IPPN and EMPHASIS a webinar series on relevant topics in plant phenotyping, including the dissemination of EPPN2020 results.

In summary, EPPN2020 was actively engaged in the plant science community at large to advertise about the opportunity of the Transnational Access within EPPN2020 as well as to disseminate the results obtained in the JRAs and the Transnational Access experiments. (For further details see 2 List of events, Deliverable 4.1 a, b, c, d).

1.4. EPPN2020 project partners and fellows

An essential outreach element was the involvement of the EPPN2020 project partners and specifically the access providers in widely disseminating the opportunity for Transnational Access including circulation of the calls within their countries and networks. Slide for communication have been continuously updated and distributed to all members of the consortium. All users that obtained Transnational Access to EPPN2020 facilities became the EPPN2020 fellows, a continuously growing number of EPPN2020 ambassadors communicating the Transnational Access opportunity by providing best case examples of access to EPPN2020 installations. The fellows were provided with updated advertising material and invited to EPPN2020 events.

In summary, the EPPN2020 partners as well as the beneficiaries that obtained Transnational Access to EPPN2020 facilities represented a very lively community actively advertising EPPN2020 activities and disseminating the results from the project.

2. LIST OF OUTREACH EVENTS

- Affordable phenotyping workshop, Co-prganized with IPPN, Juelich, German on15th of May 2017 (https://www.plant-phenotyping.org/IPPN_Affordable_Phenotyping_Workshop_May-2017)
- Workshop at the SEB Meeting in Gothenburg co-organized with EMPHASIS, Sweden, on 6th on July 2017 (https://www.sebiology.org/events/event/seb-gothenburg)

- Workshop: Current and future applications of phenotyping for plant breeding". co-organized with the COST Action, in Novi Sad, Serbia, 29th-30th of September 2017 (https://www.plant-phenotyping.org/eppn2020_workshop)
- Workshop at the Botanikertagung co-organized with DPPN in Kiel, Germany, on 19th of September 2017 (https://www.kls.uni-kiel.de/de/aktuelles/veranstaltungen/botaniktagung-2017-plant-research-in-a-changing-world)
- A Plant Phenotyping Forum: Integrating European plant phenotyping community" co-organized with EMPHASIS in Tartu, Estonia (22nd – 24th of November 2017 (https://www.plant-phenotyping.org/home_of_tartu_workshop2017)
- 1st CZPPN Meeting co-organized with CzPPN, in Olomutz, Czech Republic, on 4th of December 2017
- Workshop on Root Phenotyping Technologies including a Hands-on session, co-organized with APPN in Vienna, Austria, 17th-18th April, 2018: (https://www.appn.at/wp-content/uploads/2018/04/ProgrammAPPN2-2.pdf)
- Training session at the annual meeting of EPPN2020: "Deep Machine Learning for Plant Image Analysis" in Nottingham, UK 23rd May, 2018: (https://eppn2020.plant-phenotyping.eu/index.php?index=209).
- Workshop at the XII International Conference on Grapevine Breeding and Genetics: "Advances and applications of plant phenotyping in viticulture" in Bordeaux, France 16th July, 2018: (http://gbg2018.u-bordeaux.fr/en/Programme/r798.html)
- A plant phenotyping workshop at the International Horticultural Conference, co-organized with EMPHASIS in Istanbul, Turkey, August 2018 (http://www.ihc2018.org/en/WORKSHOPS.html)
- EPSO/FESPB Conference, June 2018, Copenhagen, Denmark (http://www.europlantbiology2018.org/)
- A workshop on data management within the Arabidopsis community ICAR, co-organized with EMPHASIS in Turku Finland, June 2018 (http://icar2018.arabidopsisresearch.org/programme-3580/workshops/)
- A workshop co-organized with Phen-Ital and EMPHASIS in Matera, Italy 5-6th September 2018: (http://www.phen-italy.it/index.php/news-events/80-presentation-slides-workshop-the-italian-plant-phenotyping-landscape-and-the-other-international-initiatives)
- Field Phenomics workshop co-organized with EMPHASIS in Ghent Belgium 6th of September 2018, as a satellite meeting of the Biometrics Eucarpia Conference in Ghent (https://emphasis.plant-phenotyping.eu/EMPHASIS_field_phenomics_workshop)
- Plant Phenotyping Forum co-organized with APPN, Vienna, Austria 13th September 2018: (https://www.appn.at/plant-phenotyping-forum/)
- Presentations and a workshop at the 5th International Plant Phenotyping Symposium (IPPS 2018) coorganized with IPPN in Adelaide, Australia 2nd – 5th October 2018. (http://www.ipps2018.com.au/)
- A workshop co-organized with the Czech Plant Phenotyping Network (CzPPN) in Brno, Czech Republic, 29th of November 2018 (https://www.ceitec.eu/2nd-czppn-meeting-environmental-simulation-and-indoor-phenotyping/a3487)
- Workshop at the COST action INTEGRAPE 2019 Chania Greece, 26-28th of March, 2019, (https://www.openagrar.de/receive/openagrar_mods_00049079)

- 15th Gatersleben Research Conference (GRC2019) Applied Bioinformatics in Crops, in Gatersleben, Germany (18 – 20 th of March 2019) https://meetings.ipk-gatersleben.de/grc2019-abc/
- 3rd APPN Workshop on Field Phenomics and Remote Sensing co-organized with APPN in Vienna, Austria, 13th of June.2019); https://www.appn.at/about/
- 1st Stakeholder workshop on Low-cost sensors and vectors for variety testing co-organized with IPPN in Angers France 8th of July.2019 (https://enquetes.inra.fr/index.php/447182?lang=en)
- A dedicated plant phenotyping session at the "Botanikertagung" co-organized with EMPHASIS in Rostock, Germany 15-19th of September 2019 (https://www.botanikertagung2019.de/allgemeine-informationen/grusswort/)
- EPPN2020 was present at the 6th International Plant Phenotyping Symposium (IPPS 2019) in Nanjing, China, 22nd -26th of October 2019 (https://ipps2019.plant-phenotyping.org/)
- EPPN2020 is co-organizing with IPPN and EMPHASIS a webinar series to compensate for events that were cancelled because of the COVID-19 pandemic (https://www.plant-phenotyping.org/Phenomics_Webinar)

CONCLUSION

EPPN2020 has engage a wide range of users as well as facility managers across Europe and has become a nucleus to provide information and competencies on many different aspects related to plant phenotyping in Europe and beyond. EPPN2020 effectively utilized synergies and competences with other national and international projects and initiative, to link diverse stakeholders and to engage the community in the discussion about the needs and requirements of plant phenotyping. EPPN2020 activities have results in many tangible outcomes from communication or access platform to quality measured obtained in Joint Research Activities that will be further developed and explored beyond the duration of the EPPN2020 project due to close cooperation with the ESFRI listed research infrastructure EMPHASIS.

Glossary

APPN: Austrian Plant Phenotyping Network (http://www.appn.at/)

COST Action (FA COST Action FA1306): The quest for tolerant varieties: phenotyping at plant and cellular level (https://www.plant-phenotyping.org/home_costfa1306)

CORBEL: cluster project linking biological and medical research infrastructures (https://www.corbel-project.eu/about-corbel.html)

DPPN: German Plant Phenotyping Network (https://dppn.plant-phenotyping-network.de/)

EMPHASIS: ESFRI listed research Infrastructure project (https://emphasis.plant-phenotyping.eu/)

ENVRI-Pus: cluster project linking environmental research infrastructures (https://www.envriplus.eu/)

EOSC-Life: cluster project to create an open, digital and collaborative space for biological and medical research (https://www.eosc-life.eu/)

EPPN2020: European Plant Phenotyping Network – 2020 (https://eppn2020.plant-phenotyping.eu/)

EPSO: European Plant Science Organisation (https://epsoweb.org/)

FPPN: Phenome French Plant Phenotyping Network (https://www.phenome-fppn.fr/phenome_eng/)

IPPN: International Plant Phenotyping Network, an association linking plant phenotyping centres across the globe (https://www.plant-phenotyping.org/)

NordPlant: NordPlant is a climate and plant phenomics university hub for sustainable agriculture and forest production in future Nordic climates (https://www.nordplant.org/)

Phen-Italy: Italian Plant Phenotyping Network (http://www.phen-italy.it/)

UK-PPN: UK Plant Phenotyping Network (http://www.ukppn.org.uk/)