

EMPHASIS

<https://emphasis.plant-phenotyping.eu/>

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Recent activities and newly developed tools and/or resources

The European Infrastructure for Multi-scale Plant Phenomics and Simulation (EMPHASIS) is a distributed ESFRI listed Research Infrastructure to develop and provide access to facilities and services addressing multi-scale plant phenotyping in different agro-climatic scenarios. EMPHASIS will establish an integrated European phenotyping infrastructure to analyse genotype performance under diverse environmental conditions and quantify the diversity of traits contributing to performance in diverse environmental conditions, plant architecture, major physiological functions and output, yield components and quality. EMPHASIS aims to address the technological and organizational limits of European Phenotyping, for a full exploitation of genetic and genomic resources available for crop improvement in changing climate. Listed on the ESFRI Roadmap in 2016, EMPHASIS is in the transition from the Preparatory Phase (2017-2020) supported by the EU project EMPHASIS Prep (Grant Agreement: 739514) to the Implementation Phase (2020-2021) and is supposed to become operational in 2022/2023. EMPHASIS engaged ministry representatives building an Interim General Assembly (IGA), which is open to participation by all European countries that wish to participate in the further development of EMPHASIS and formally sign a "Letter of Intent".

IGA has been making concrete decisions on strategic aspects of EMPHASIS. Currently, representatives from 11 countries are brought together in the IGA (Belgium, Estonia, France, Germany, Israel, Italy, Netherlands, Portugal, Serbia, Switzerland, United Kingdom) to make decisions on user strategies, governance, funding, legal entity, etc. In parallel, "pilot services" have already been developed and implemented during the start-up phase in order to develop and test selected services for EMPHASIS and thus generate concrete added value for the scientific community at an early stage. The "pilot services" include: Field Phenotyping, Innovation, Harmonization, Modeling, Data Management, Training.

Planned future activities

EMPHASIS is expected to enter the operational phase in 2022/2023 with a full portfolio of services. In a distributed pan-European research infrastructure, services will be provided and organized by Service Center(s). The implementation of services is done at national level and the establishment of national nodes involving national funding agencies and ministries is a central part of distributed Research Infrastructures.

Please provide a paragraph describing the general impact of the COVID19 pandemic on your activities

The pandemic has limited a direct interaction with different stakeholders, which is essential in discussing the operations of EMPHASIS. All exchange was moved to web conferences slowing down the development of EMPHASIS.



EPPN2020

<https://eppn2020.plant-phenotyping.eu/>

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The EPPN2020 is a H2020 funded research infrastructure project (Grant Agreement: 731013) that provides the European Plant Science community (public and private) with access to phenomics installations chosen for excellence and avoidance of redundancy, with a capacity of hundreds of genotypes and dedicated to innovative non-invasive measurement of traits at different levels of plant organization. It also provides this community with tools, methods and software for organization, storage and joint analysis of experiments at different scales (organ to canopy), time resolutions (minutes to month), for contrasting environmental conditions (current or future). Networking activities establish cooperation and increase integration between facilities involved in EPPN2020 and outside, as well as user groups belonging to academic and private sectors.

EPPN2020 coordinates its activities with the future ESFRI infrastructure EMPHASIS, with the communities of modelling and genomics and with national programs. EPPN2020 has recently finalized the Transnational Access (TNA) scheme enabling 153 experiments at 31 installations. The TNA users were from 37 countries including 16 non-European countries. A procedure with a smooth access was designed based on a web portal that includes information on all available installations, and on a fair and open selection process. Over 80% of the users had no previous cooperation with access providers. 30% of accesses in controlled conditions were based on datasets previously collected in field experiments, which may result in high-level publications. The TNA scheme was complemented by Joint Research Activities, which standardize the good practices in phenomics, via the mapping of current practices, training sessions and the design, test and dissemination of methods, tools and software. Particularly a trans-platform experiment was designed that involved 13 platforms for testing all methods designed in Joint Research Activities, for addressing methodological issues in phenomics and for exchanges with other communities (e.g. genomics or modelling).

Planned future activities

EPPN2020 will end in October 2021, the results and tools developed within the framework of EPPN2020 will be further developed and made available through the Research Infrastructure EMPHASIS.

Please provide a paragraph describing the general impact of the COVID19 pandemic on your activities

The pandemic has reduced the opportunity of the users of Transnational Access to travel to the host institutions and be directly involved in performing the experiments. Additionally, the lockdowns created substantial delays so that the project had to be extended.