

## **EMPHASIS European Infrastructure for Multi-scale Plant Phenomics and Simulation for Food Security in a Changing Climate**

---

<b>Scientific area:</b>	Life Sciences (Plant sciences)
<b>Host country:</b>	Belgium
<b>Infrastructure type:</b>	Distributed
<b>Dutch node or similar:</b>	Not applicable
<b>Established:</b>	2016, Project ESFRI Roadmap
<b>Dutch member since :</b>	2018, Prospective member (NPEC)
<b>Phase:</b>	Preparatory

### **Terms of withdrawal**

n/a

### **Access to facilities**

n/a

### **Access to data**

Open Access

### **User definition:**

Researchers from academia and industry interested in quantitative phenotyping of crops under well-defined environmental conditions as a substantial bottleneck in basic and applied plant sciences such as breeding. Technology developers involved in developing technology from smart agriculture.

### **Description:**

The European Strategy Forum for Research Infrastructures (ESFRI) has identified "Plant Phenotyping" as a priority for the European research area, and EMPHASIS has been listed on the ESFRI Roadmap 2016 for Research Infrastructures as an infrastructure project to develop and implement a pan-European plant phenotyping infrastructure. As of November 2020, eleven countries have signed the Letter of Intent, with the IGA being open for further participation.

### **Financial details**

#### **Mean Dutch membership over 5 year period (k€)**

n/a

#### **Mean Dutch share of contribution over 5 year period (%)**

n/a

#### **Financial details between 2016-2020**

n/a

#### **Dutch membership fee as a percentage of total membership fees**

n/a

### **Employee statistics**

EMPHASIS is in the preparatory phase and as such supported by activities from third party projects.

### **Use of the infrastructure**

#### **Number of users**

n/a

*Comments by the RI*

EMPHASIS is in the preparatory phase and as such supported by activities from third party projects. Infrastructure projects (EPPN2020) indicate a substantial demand for access to plant phenotyping infrastructure, the demand has been substantially larger than the available capacity. EPPN2020 (2017-2021), a Horizon2020 funded project consisted of 31 plant phenotyping facilities providing Transnational Access (TNA), one of them from The Netherlands. Note that EPPN2020 facilities were not allowed to provide more than 20% of the capacity for access within the TNA scheme.

Some quantitative numbers from EPPN2020 (2017-2021)

- 167 applications
- 144 approved and finalized TNA projects
- NL: 1 facility offering 6 TNA projects
- NL User: 10 applications, 9 approved TNA projects
- List of publications from EPPN2020 ([www.eppn2020.plant-phenotyping.eu](http://www.eppn2020.plant-phenotyping.eu))

**Application information**

**Number of applications/requests to use the RI**

n/a

*Comments by the RI*

EMPHASIS is in the preparatory phase and as such supported by activities from third party projects.

**Sample request information**

**Number of sample requests to the RI**

n/a

*Comments by the RI*

Data not applicable for EMPHASIS.

**Data request information**

**Number of requests for data to the RI**

n/a

*Comments by the RI*

Publically obtained data is freely accessible in multitude of open access databases or repositories, thereby quantification not possible.

**Contributions provided by organisations or companies in the participating countries**

n/a

*Comments by the RI:*

Multiple national and international projects, not quantifiable.

**Income from user fees**

n/a

*Comments by the RI:*

Multiple national and international projects, not quantifiable. Construction costs most of the facilities were build and established within different countries by national (regional, EU) funding often from different sources over the last decade. An educated guess at this stage (2022) is that about 150-200 Mio EUR were invested within the last 10 years to build phenotyping facilities. Operating costs (operation, upgrade etc) are covered from different sources, basic budget, third party funding, industry projects, which is not possible to quantify.

### **Additional questions to the RI**

#### **What is the Dutch contribution to the RI?**

The Dutch plant phenotyping community has been pioneering the development in plant phenotyping in Europe with a very strong capacities in development and application of novel technology in plant phenomics. Particularly the Netherlands Plant Eco-Phenotyping (NPEC) infrastructure represents one of the cornerstones of plant phenotyping facilities in Europe complementing the developments in other countries.

#### **Currently, are there any RI's that provide similar kinds of research infrastructure and services as yours in the world?**

Plant phenotyping infrastructure contributes to quantitative assessment of a diversity of crop traits under diverse environmental conditions as a bottleneck for advancement in basic and applied plant science such as breeding or smart agriculture. As such EMPHASIS will support:

- Higher quantity and quality of plant biomass production
- Novel properties and products
- Yield under difficult environmental conditions
- Sustainable production/intensification
- Transition towards agroecology
- Smart agriculture

Some aspects of EMPHASIS services are provided by AnaEE.

#### **What are the overlaps and what are the main differences? To which extent do you cooperate or compete?**

AnaEE focuses on ecosystem functioning including natural and agricultural ecosystems with a major goal to understand agricultural ecology. EMPHASIS, in turn, focusses on sustainable increase and resilience in plant production mostly by supporting plant breeding. For more details see [here](#).

#### **What are the RI's major educational and outreach activities?**

EMPHASIS is in the preparatory phase. Training and educational activities are under development.