

# 2<sup>nd</sup> APPN & EPPN Meeting



Austrian Plant Phenotyping Network



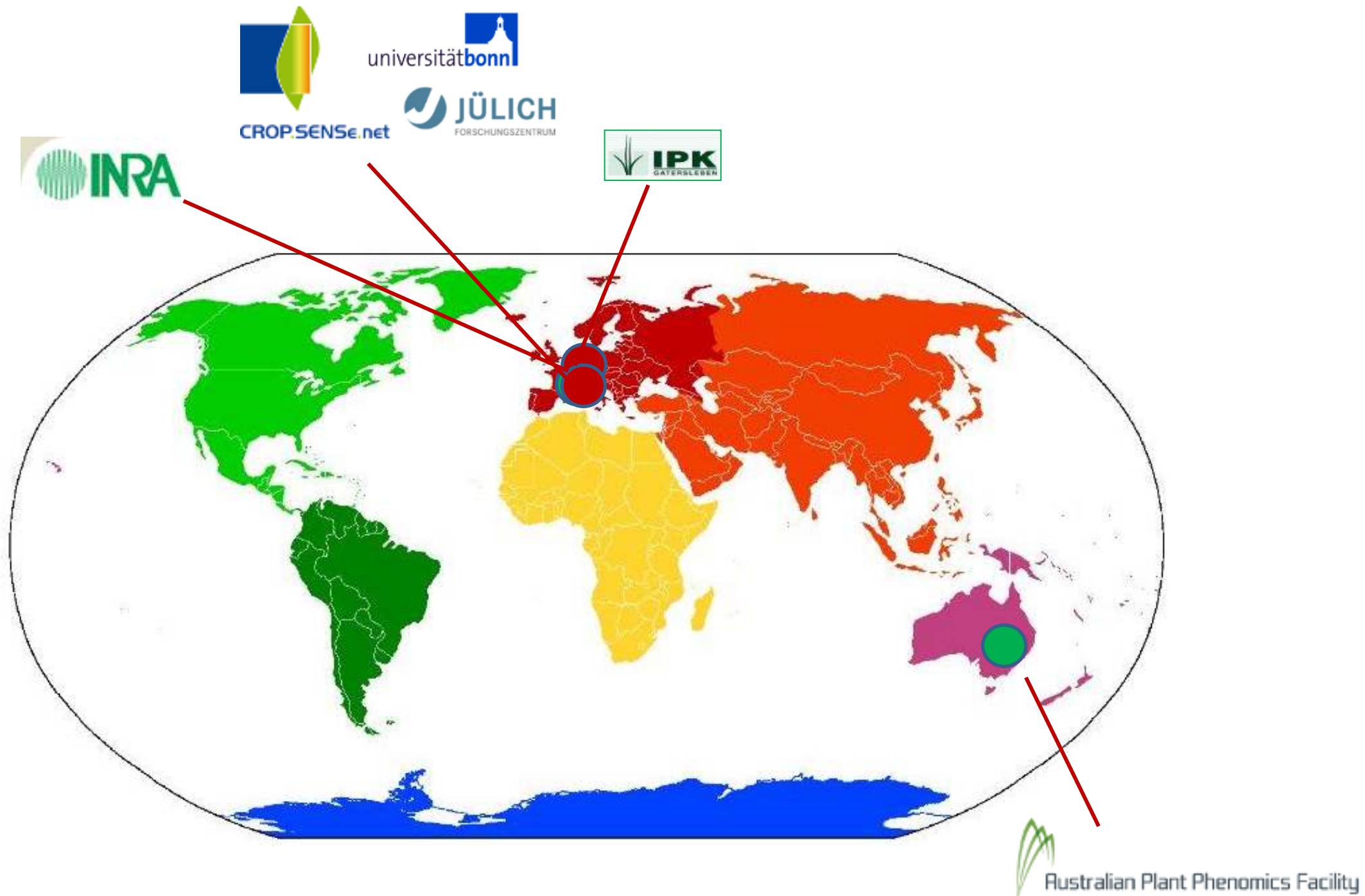
## INTEGRATING THE PLANT PHENOTYPING COMMUNITY IN EUROPE

ROLAND PIERUSCHKA



# Plant phenotyping has develop dynamically

2008





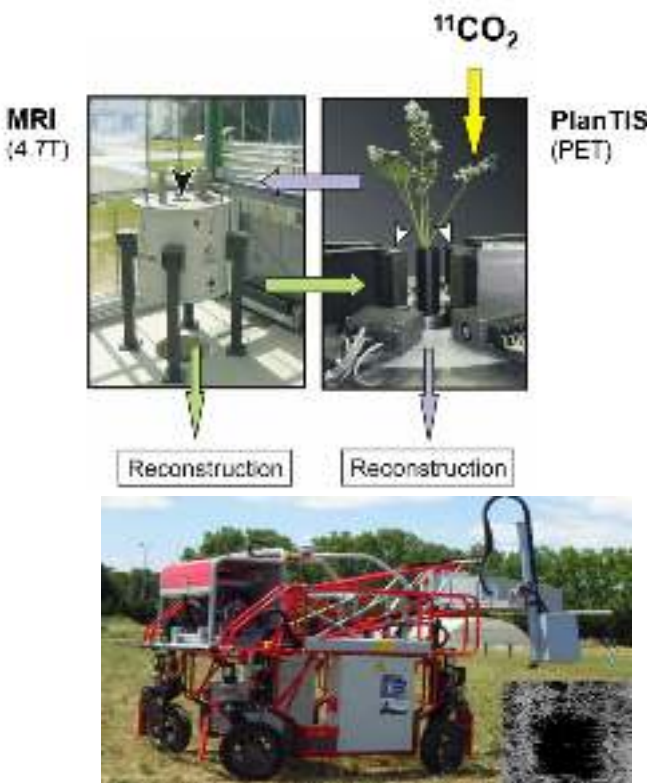
# Plant phenotyping has develop dynamically

2016

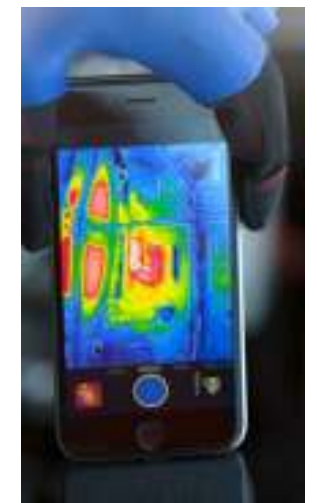
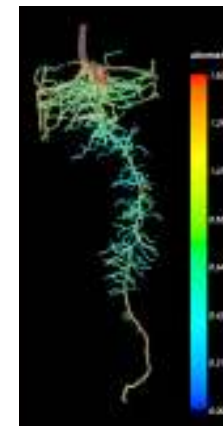




# Rapid development in plant phenotyping



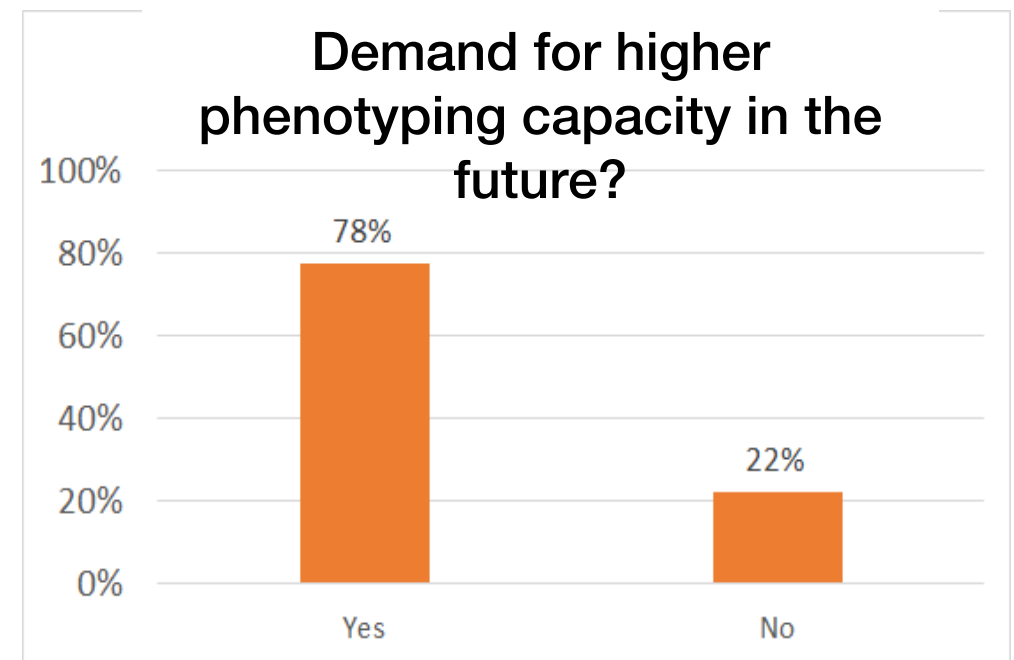
- New (non invasive) technology
  - controlled environment
  - field conditions
- Automation and robotics
- Environmental monitoring and simulation
- Image analysis
- Data management
- Management of large facilities



# Growing demand for phenotyping

## Increasing and diverse demand for:

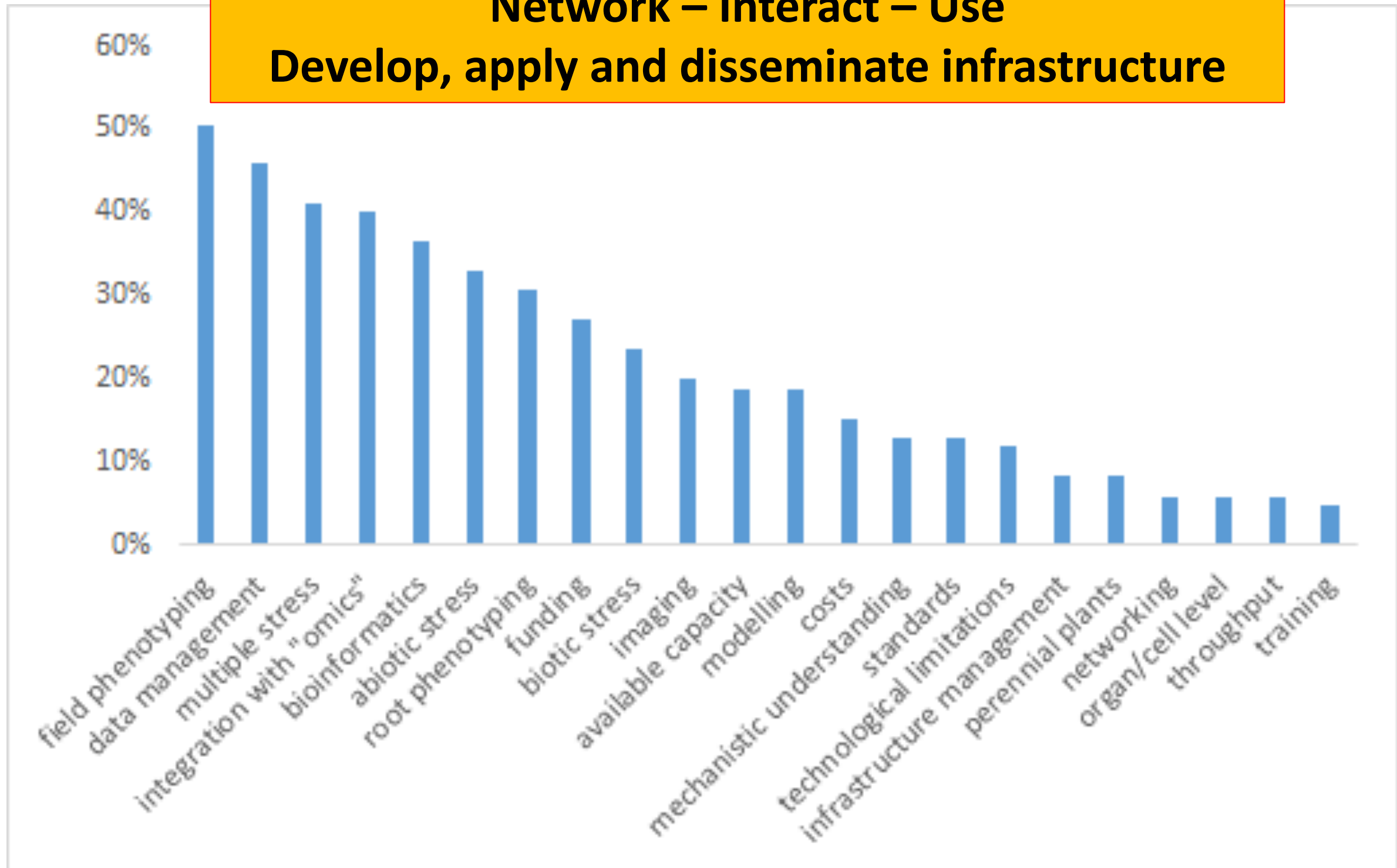
- Addressing diverse crops
- Specilized infrastructure
  - plant characterisation
  - environmental simulation
- Expertise is requiered
  - analysis piplenes
  - modelling
  - data re-usability
- Integrated (multi-disciplinary) approaches



Preliminary data: EMPHASIS survey

# Largest challenges in plant phenotyping

**Need to  
Network – Interact – Use  
Develop, apply and disseminate infrastructure**





# Plant phenotyping networks



**UK Plant Phenomics Network**



PPN-Ireland



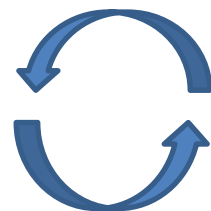
**National platforms**



**Regional Projects / Networks**



**Crop specific aspects**



**General development**



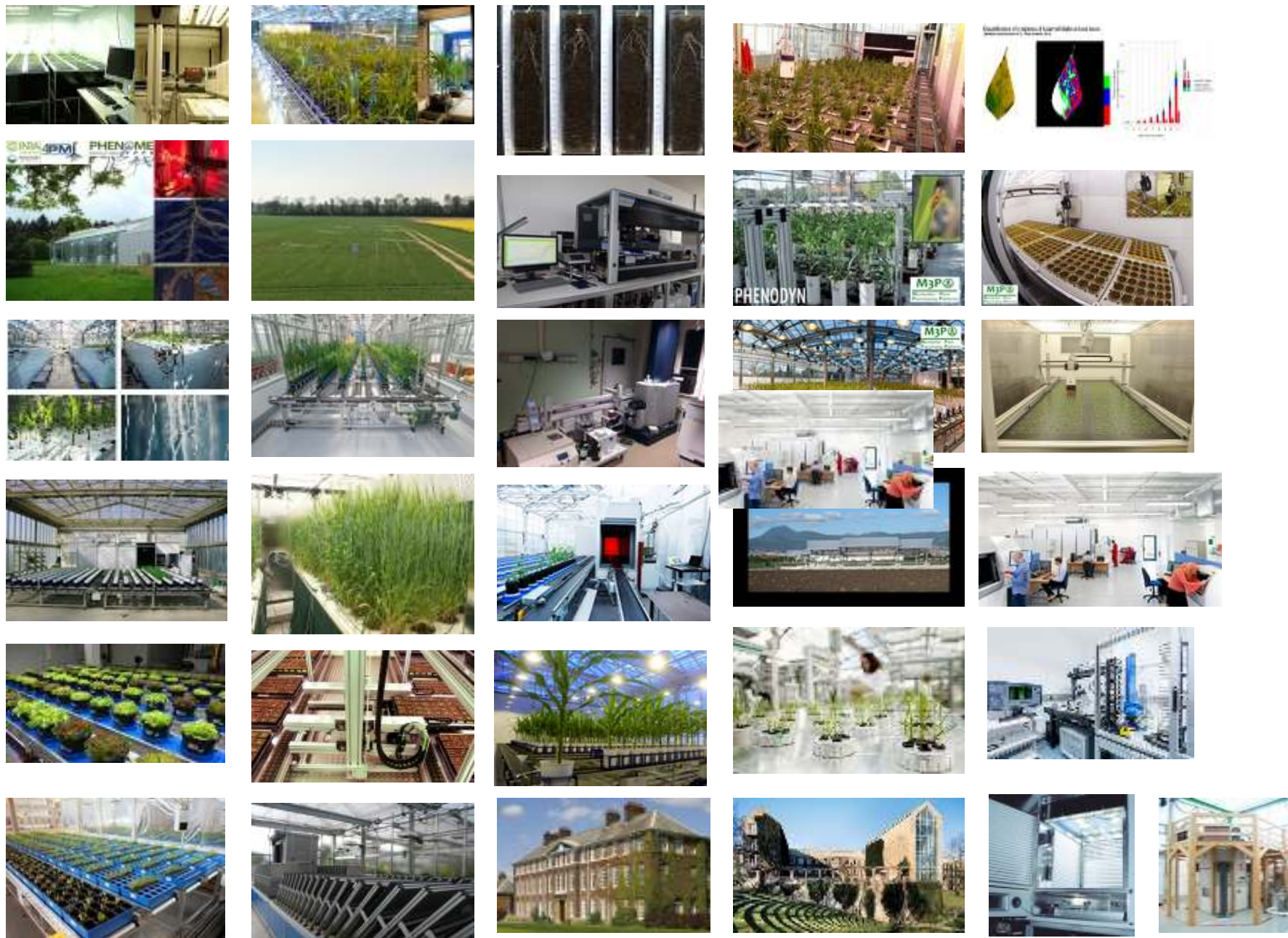
**International networks**



# European Plant Phenotyping Network Projects

**2017-2020**

**Access to 31 installations in Europe**





# European Plant Phenotyping Network Projects

**2017-2020**

**Access to 31 installations in Europe**



**2<sup>nd</sup> Call for Transnational Access is open:  
Applications can be submitted now**

Application deadline: 29<sup>th</sup> of June 2018, at 17:00

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



Based on a simple application procedure



Calls every 6 months



Full cost of projects covered by the project, including travels



20% accesses for non-European

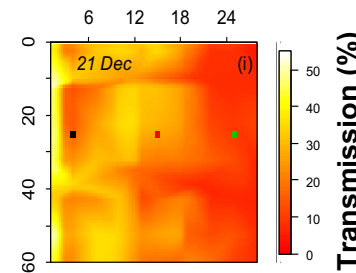


# EPPN2020 : Joint research activities

## Goal: Improve the quality of transnational access

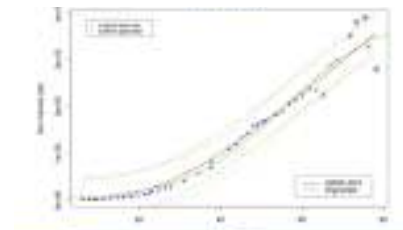
### 1. *Methods for environmental and plant measurements*

- *Progress in environmental characterization*
- *Calibration procedure*
- *Joint cross-platform experiments*



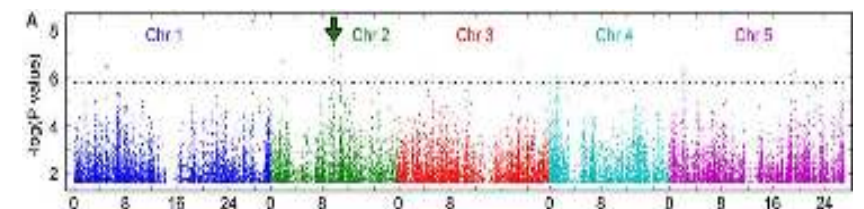
### 2. *Design and analysis of experiments across multiple platforms*

- *Outlier identification and statistical quality control*
- *Statistical design and analysis*
- *Data integration between platform*



### 3. *Building a consistent Information System in the different nodes and defining standardisation strategies*

- *Data interoperability methods*
- *Local data management*
- *Data integration and high level webservices*
- *Deployment and assessment of a distributed information system*



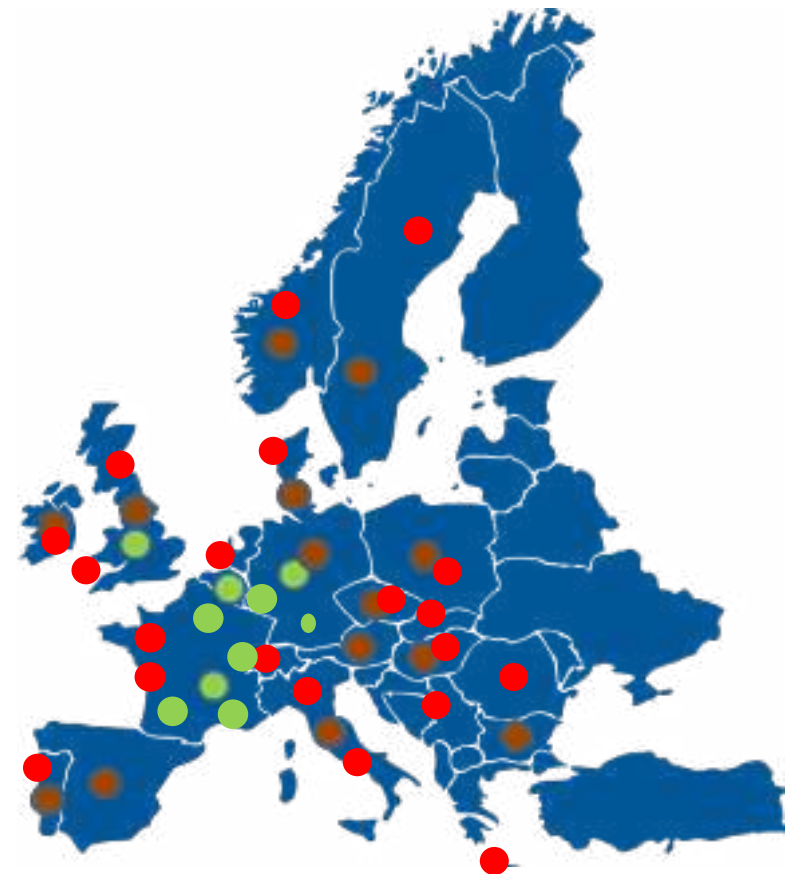


# Sustainable pan-European plant phenotyping infrastructure



[www.plant-phenotyping.eu](http://www.plant-phenotyping.eu)

## **EMPHASIS: European Infrastructure for Multi-Scale Plant Phenotyping And Simulation for Food Security in a Changing Climate**



**Developing infrastructures and providing access for multi-scale phenotyping to analyze genotype performance in diverse environments and quantify the diversity of traits**

## Objectives



**Develop an integrated pan-European infrastructure of instrumented facilities available to the user community**



**Link data acquisition to a European-level data information system and modelling**



**Develop, evaluate and disseminate knowledge and novel technologies providing innovative opportunities for academia & industry**



# EMPHASIS – why going European?

ESFRI



## SYNERGY

- Investments
- Data management
- Education/ Training

## INNOVATION

- Unique installations
- From academia to industry

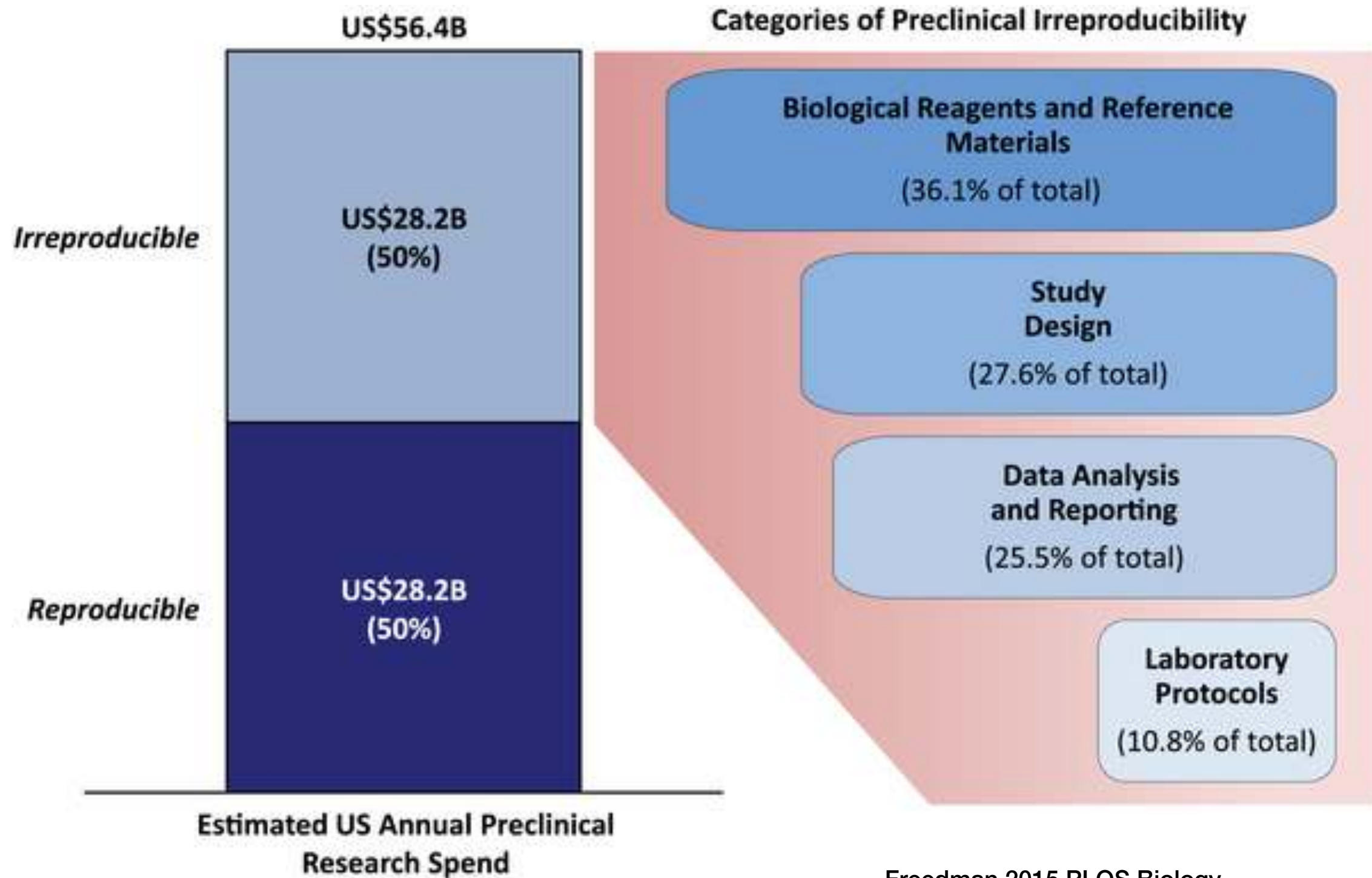
## ACCESS

- Development
- Use
- Translation/ Dissemination



# EMPHASIS – why going European?

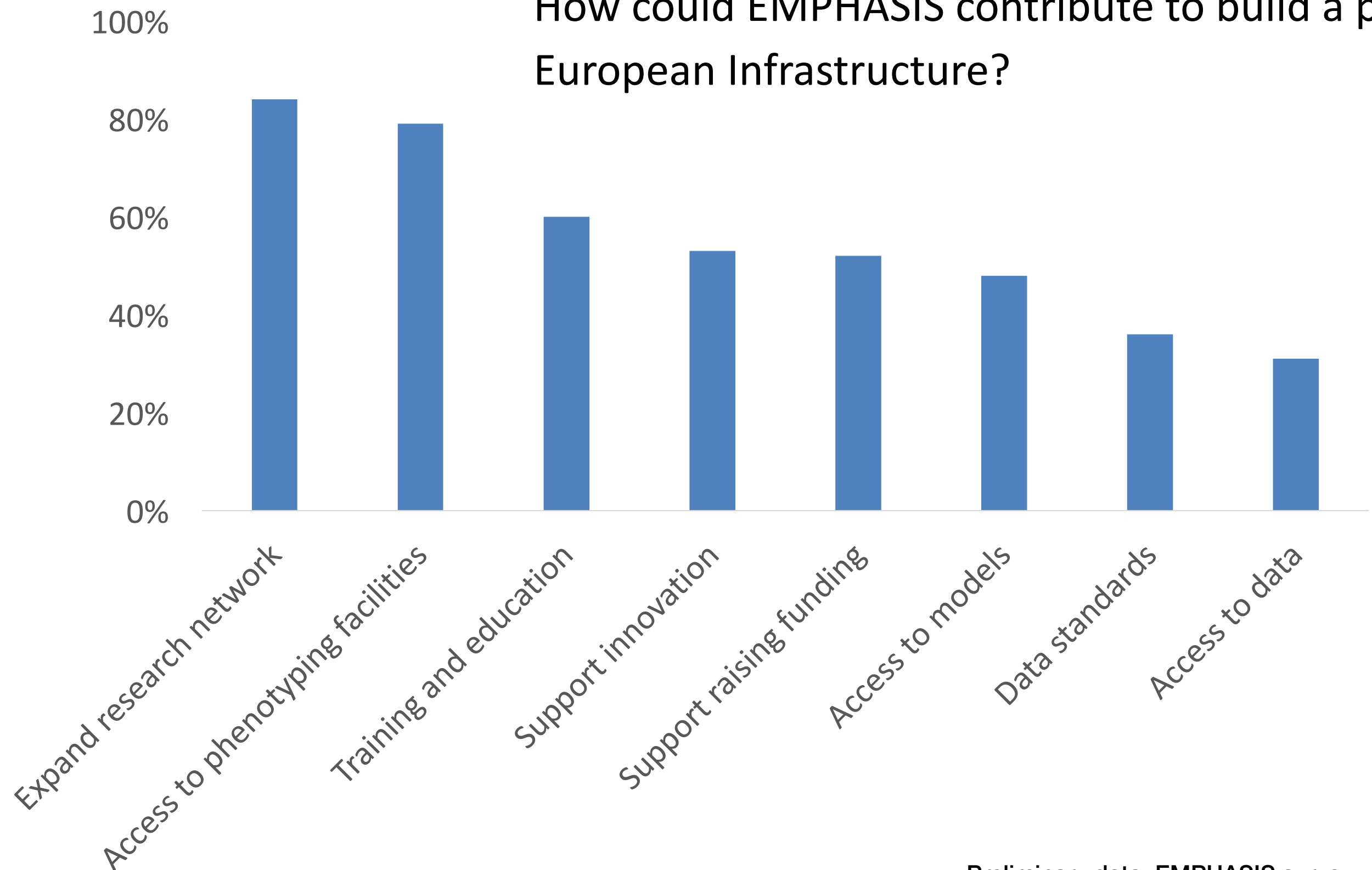
ESFRI



Freedman 2015 PLOS Biology



## How could EMPHASIS contribute to build a pan European Infrastructure?



*Facilities for high resolution, high throughput phenotyping*

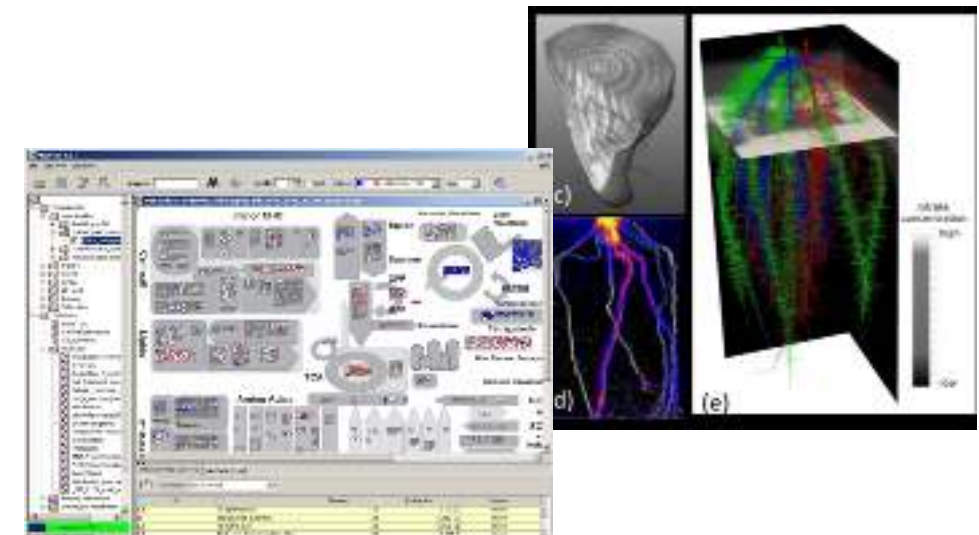


*Semi-controlled field systems for high throughput phenotyping*



*Network of field sites practical experiments*

*Modelling platform*



*Joint data management and e-infrastructure*



# EMPHASIS: timeline

2015 - 2016

2017 - 2020

> 2021

EMPHASIS  
proposal

Preparatory phase

Implementation / Routine operation

ESFRI ROADMAP

- EMPHASIS on ESFRI Roadmap

EMPHASIS-PREP

- legal framework business plan
- community building

EMPHASIS - legal entity

- sustainable operation
- RI life cycle: new infrastructure

2026  
EMPHASIS  
LANDMARK

## Community Building



PPN-Ireland



x

Plant  
Phenotyping  
Network

## **EMPHASIS-PREP will establish a transparent, open and inclusive process for the foundation of future operation of EMPHASIS**

- **EMPHASIS – PREP Group**  
Members of EMPHASIS-PREP EU funded project → Preparing the Business plan
  - **EMPHASIS – PREP Support Group**  
National phenotyping communities
  - **Ministry mirror group (Min-MG)**
  - **Funders board (F-AB)**
  - **Industry advisory board (Ind –AB)**
- Consultation group



# Plant phenotyping beyond Europe



**International  
Plant  
Phenotyping  
Network**

**IPPN**

# IPPN - a global association for Phenotyping

Open for new members



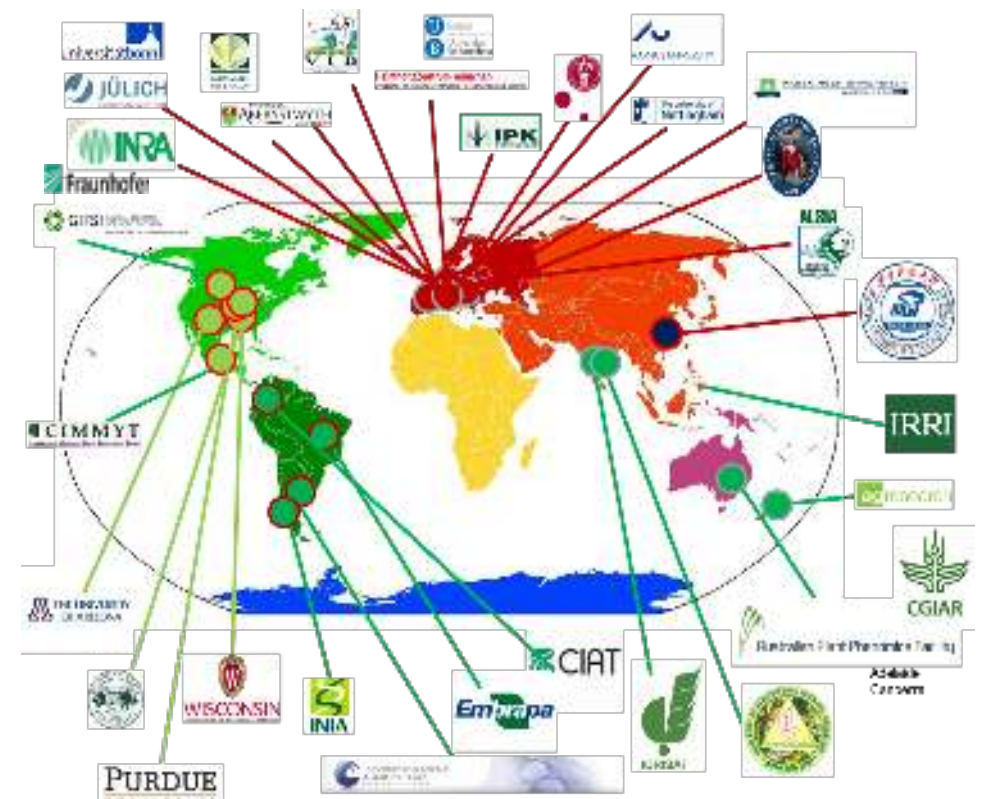
**Non-profit association to integrating the community across the globe – founded in Dec. 2015**

## Goal:

- Integrating the globally fragmented activities from academia and industry
- Enabling exchange of knowledge, information, and expertise

## Instruments:

- Organizing International Plant Phenotyping Symposia
- Establishment of Working Groups on different topics
- Organization of workshops, meeting, summer schools, etc.
- Development of interactive communication platforms





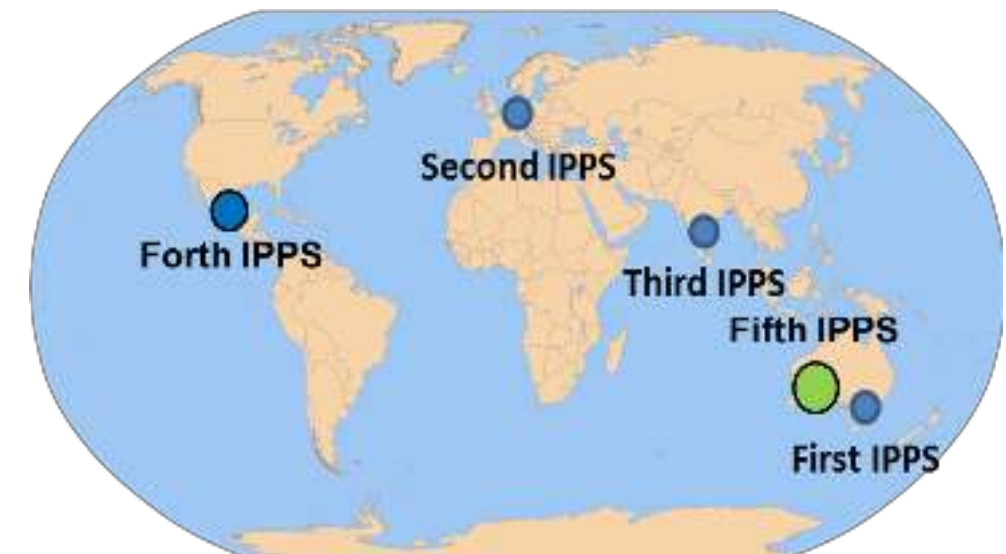
# International Plant Phenotyping Symposia



## 5<sup>th</sup> International Plant Phenotyping Symposium

**From plant - To data - To impact**

**2-5<sup>th</sup> of October 2018,  
Adelaide, Australia**



5TH INTERNATIONAL PLANT PHENOTYPING SYMPOSIUM | 2-5 OCTOBER 2018 | ADELAIDE, AUSTRALIA | [WWW.IPPS2018.COM.AU](http://WWW.IPPS2018.COM.AU)





# INTEGRATING THE PLANT PHENOTYPING COMMUNITY IN EUROPE

ROLAND PIERUSCHKA



Mitglied der Helmholtz-Gemeinschaft

