PheNo - Norwegian Plant Phenotyping Infrastructure

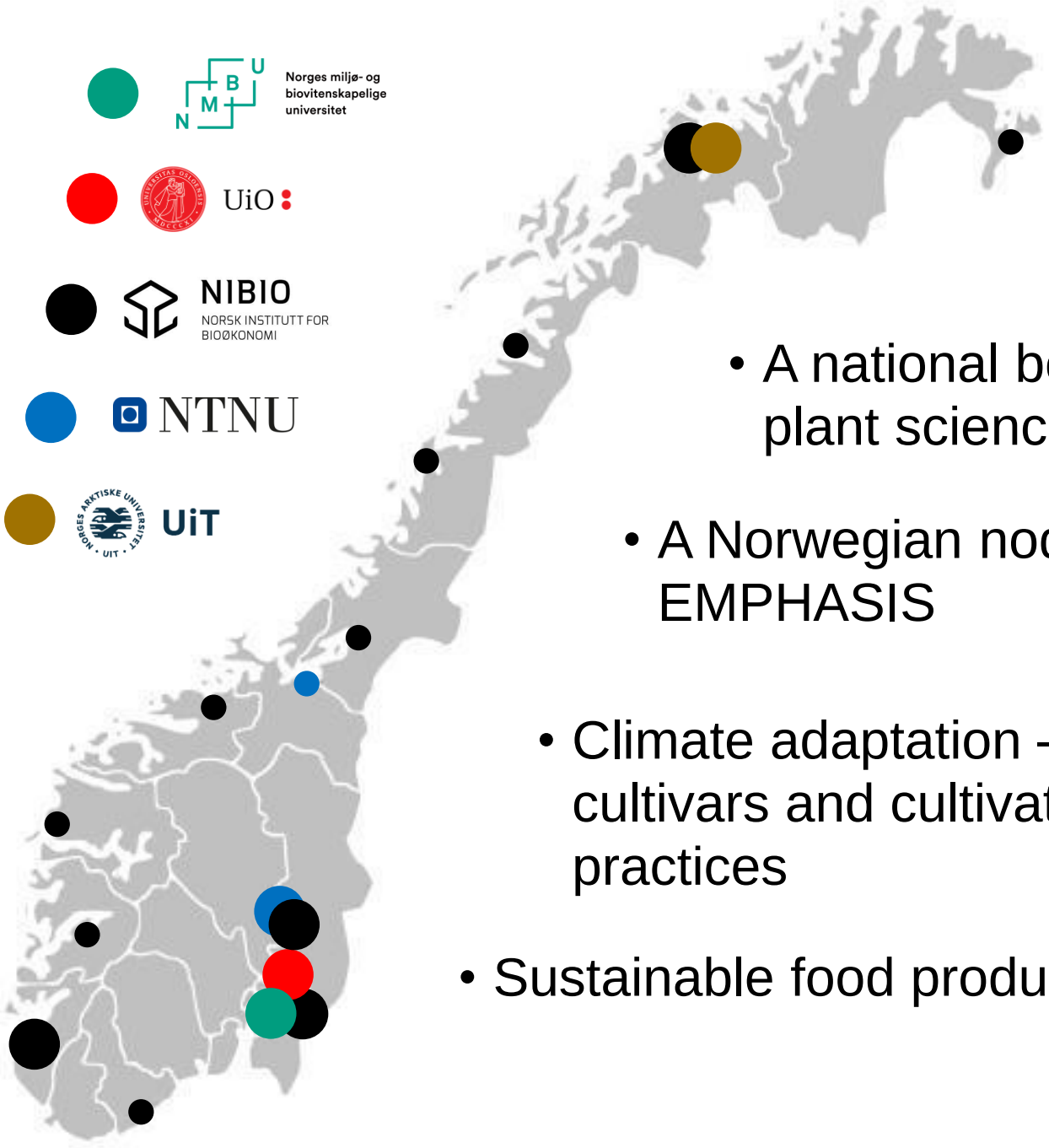
Norges miljø- og biovitenskapelige universitet

UiO

NIBIO
NORSK INSTITUTT FOR BIOØKONOMI

NTNU

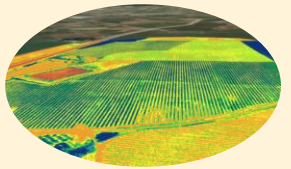
UiT



- A national boost for plant science
- A Norwegian node in EMPHASIS
- Climate adaptation – robust cultivars and cultivation practices
- Sustainable food production

Research facilities and services in:

Controlled environment phenotyping



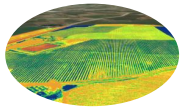
Field phenotyping

Seed phenotyping

Data analysis

PheNo - **No**rwegian Plant **Phe**notyping Infrastructure

- **Objectives:**
  - To provide the Norwegian plant research and industry communities with state-of-the-art facilities for high resolution plant phenotyping by establishment of a national plant phenotyping infrastructure.

- PheNo will be a **distributed infrastructure** with installations across the country:
  -  Controlled environment phenotyping: NMBU, UiO, UiT, NIBIO
  -  Field phenotyping: NMBU, NIBIO
  -  Seed phenotyping: NMBU, UiO
  -  Data analysis and data management services: NTNU, UiT

PheNo - Norwegian Plant Phenotyping Infrastructure

Industry actors

Felleskjøpet
Graminor
Norsk Landbruksrådgiving
KIMEN SÅVARELABORATORIET AS
eurofins
TINE
AgriBiotix SUSTAINABLE AGRICULTURE
YARA
bama
GARTNERHALLEN Dyrker godt liv

- Strong **commitment** with **24% in-kind contribution**
  - Application budget of 108.9 mill. NOK, of which 25.8 mill. NOK in partner contributions
- Strong **user base:**
  - **91 projects** with total budget **1628 mill. NOK**
  - **71 courses** at universtiy level involving **2200 students** annually
- Supported by central **industry actors**

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Our values as a national infrastructure

- Based on **well-proven solutions** to serve **the needs of the users**
- **Nationwide infrastructure**, distributed on smaller unites, **close to the users**
- Common webpage and entry portal **– accessible for all**
- Focus on **low operating costs** to enable a **healthy and sustainable economy**
- **Stepwise implementation –** can roll out services already in the first year and «learn as we go»

PheNo timeline

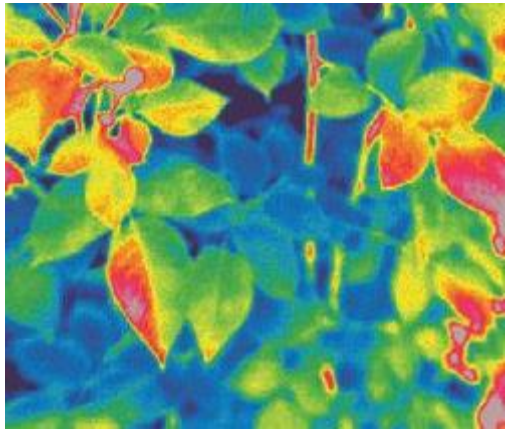
- 5-year implementation phase 2025-20229
- 5-year operational phase 2030-2035

- November-December 2024: Budget negotiations and project revision
- Project start in 2025

Funded by
The Research
Council of Norway

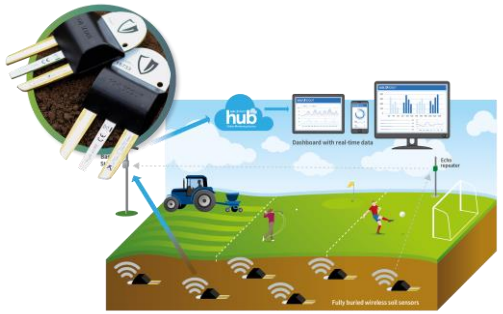
PheNo - snapshot of planned services

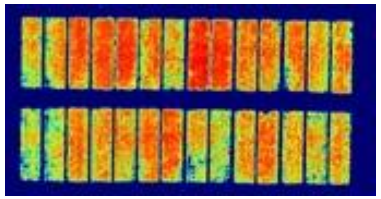
- **Controlled environment phenotyping**
  - Multispectral 3D scanning of plants in greenhouses (NMBU and UiT/NIBIO-Tromsø)
  - Robotic platform for small plants (UiO)
  - Hyperspectral imaging? (depends on funding)



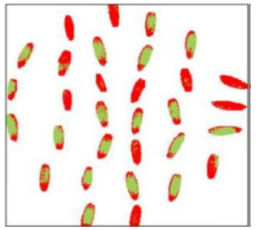
PheNo - snapshot of planned services

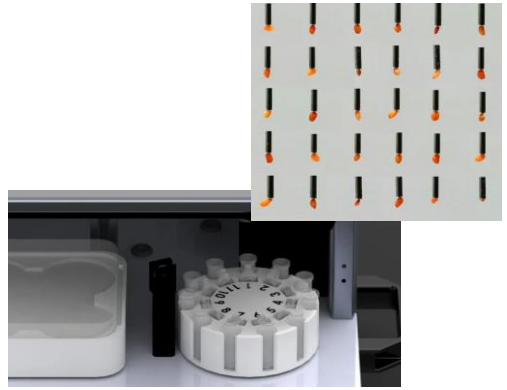
- **Field phenotyping**
  - «Digital farm» - upgraded field trial equipment, soil sensor networks, and phenotyping in semi-controlled field trial environments (NMBU)
  - UAVs and robotics in field phenotyping (NMBU, NIBIO)
  - Spectrometric soil analyses (NIBIO)





PheNo - snapshot of planned services





- **Seed phenotyping**
  - NIR- and image-based seed phenotyping (NMBU)
  - Robotic seed sorting and seed phenotyping system (UiO)
- **Data analysis support and data management**
  - IoT sensor network and AI data expertise (NTNU)
  - Data management services (UiT)
- **Training and education**
  - Courses on phenotyping methodologies will be developed in collaboration with EMPHASIS and the PHOTOSYNTECH national research school

Photosyntech

EMPHASIS