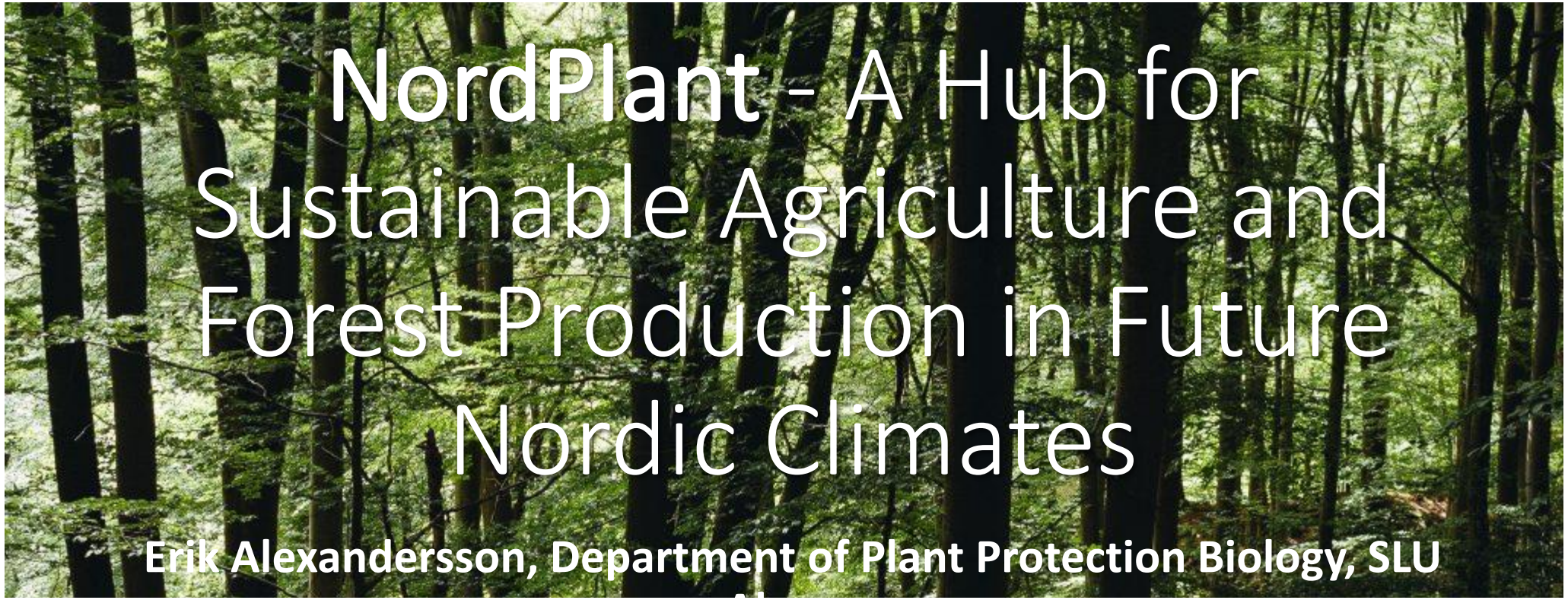


NordPlant - A Hub for Sustainable Agriculture and Forest Production in Future Nordic Climates

Erik Alexandersson, Department of Plant Protection Biology, SLU

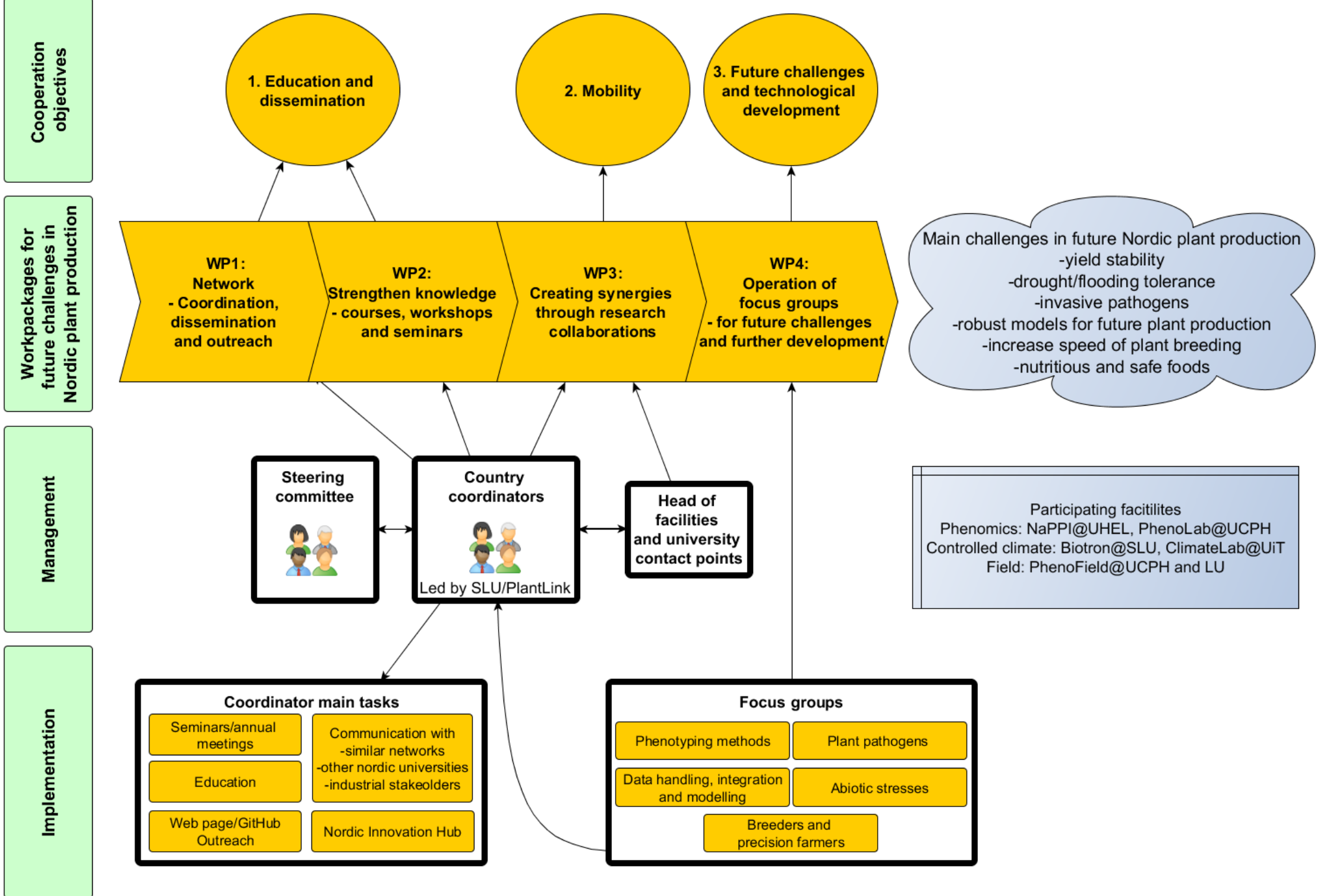
NordPlant

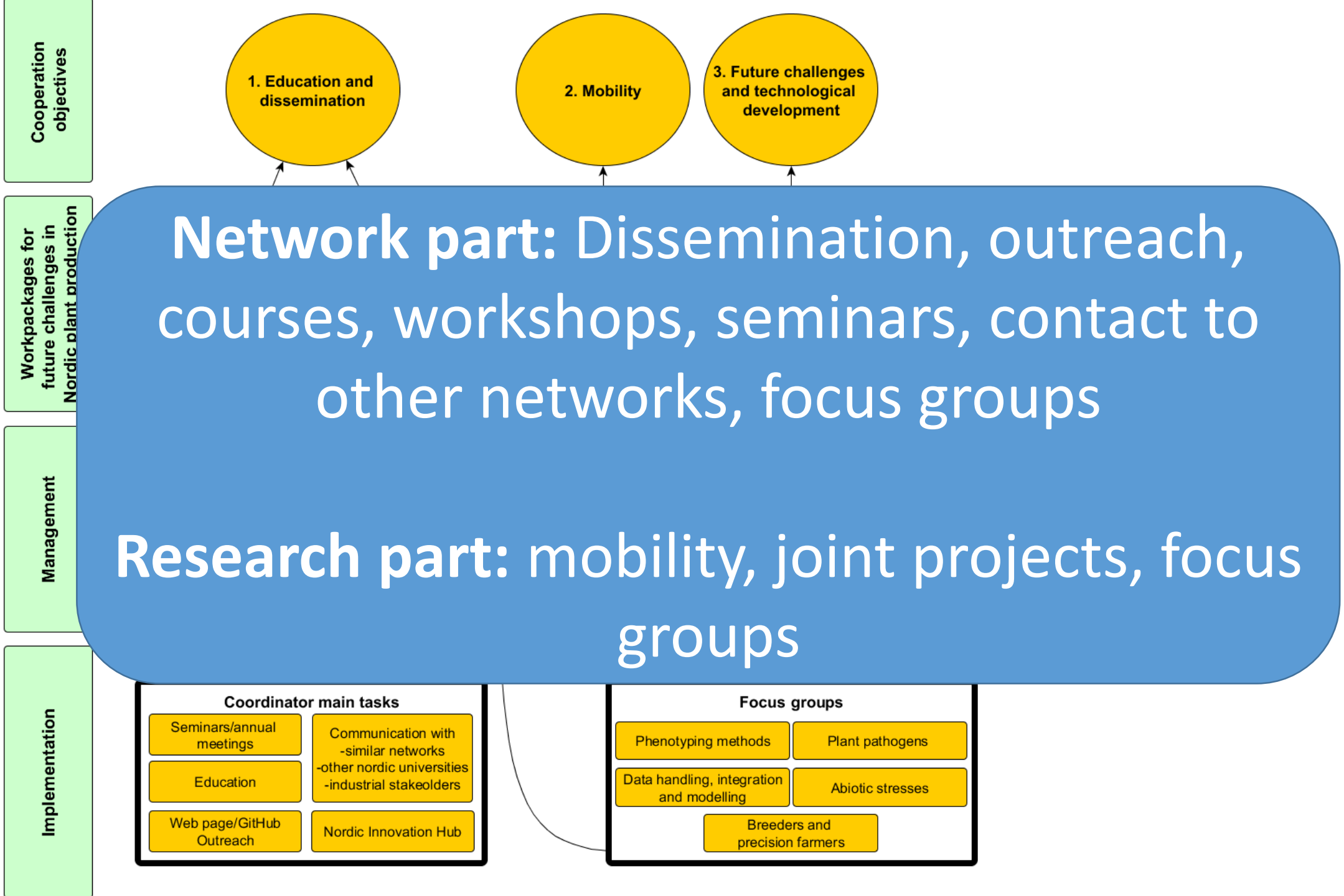
NordPlant - A Climate and Plant Phenomics Hub for Sustainable Agriculture and Forest Production in Future Nordic Climates

NordForsk supported university hub

- With cofunding 48 MNOK up to six years

UNIVERSITY OF COPENHAGEN
HELSINGIN YLIOPISTO
HELSINGFORS UNIVERSITET
UNIVERSITY OF HELSINKI
LUND UNIVERSITY
SLU
UNIVERSITY OF TROMSØ


Cooperation objectives
Workpackages for future challenges in Nordic plant production
Management
Implementation
1. Education and dissemination
2. Mobility
3. Future challenges and technological development
WP1: Network - Coordination, dissemination and outreach
WP2: Strengthen knowledge - courses, workshops and seminars
WP3: Creating synergies through research collaborations
WP4: Operation of focus groups - for future challenges and further development
Main challenges in future Nordic plant production
-yield stability
-drought/flooding tolerance
-invasive pathogens
-robust models for future plant production
-increase speed of plant breeding
-nutritious and safe foods
Steering committee
Country coordinators
Led by SLU/PlantLink
Head of facilities and university contact points
Participating facitilites
Phenomics: NaPPI@UHEL, PhenoLab@UCPH
Controlled climate: Biotron@SLU, ClimateLab@UiT
Field: PhenoField@UCPH and LU
Coordinator main tasks
Seminars/annual meetings
Communication with -similar networks -other nordic universities -industrial stakeolders
Education
Web page/GitHub Outreach
Nordic Innovation Hub
Focus groups
Phenotyping methods
Plant pathogens
Data handling, integration and modelling
Abiotic stresses
Breeders and precision farmers



Network part: Dissemination, outreach, courses, workshops, seminars, contact to other networks, focus groups

Research part: mobility, joint projects, focus groups

Focus groups

1. Phenotyping methods in field, greenhouse, and cell physiology (UHEL)

2. Data handling and integration related to phenotyping and modelling by integrated climate and phenomics data (UCPH/LU)

3. Emerging and increasing plant pathogens and pests in the Nordic countries (SLU)

4. Abiotic stress relevant for future climate change in the Nordic countries (UiT)

5. Demands of breeders and precision farmers (UCPH)

Join the focus groups meetings tomorrow at 9:00-10:30

Sign up on www.nordplant.org

Steering committee and Exucutive group NordPlant

Representative	Deputy representative	University
Jari Valkonen	Kristiina Himanen	UHEL
Erik Andreasson	Rodomiro Ortiz	SLU
Thomas Roitsch (chair)	Alexander Schulz	UCPH
Laura Jaakola	Kirsten Krause	UiT
Lars Eklundh	Anna Maria Jönsson	LU

Executive group: Kristiina Himanen (Finland); Erik Alexandersson (Sweden + NordPlant coordinator); Thomas Roitsch (Denmark); Laura Jaakola (Norway)

www.nordplant.org

Sign up for our newsletter!

Review: Nordic research infrastructures for plant phenotyping, published in Agricultural and Food Science

Erik Alexandersson, Markku Keinänen, Aakash Chawade and Kristiina Himanen

Survey of 14 Nordic Plant Growth Facilities for phenotyping and controlled climates

Name of facility	PhenoDyn; Drought spotter and Planteye	Frederiksberg facilities at University of Copenhagen	Phenolab Taasterup at University of Copenhagen	Greenhouse Taasterup, University of Copenhagen	RERAF - Risø Environmental Risk Assessment facility	Controlled Environment Facility for Plant Research	The Centre for Plant Research in Controlled Climate (SKP)	Climate laboratory Holt	The biotron at SLU Alnarp
Host institution	Food Science, Aarhus University	PLEN, University of Copenhagen	PLEN, University of Copenhagen	PLEN, University of Copenhagen	Inst for Env engineering, Technical University of Denmark	Department of Biosciences, University of Oslo	Norwegian University of Life Sciences (NMBU)	UiT The Arctic University of Norway	LTV faculty, SLU Alnarp
Type of facility	Phenotyping and controlled environment	Controlled environment in greenhouses	Phenotyping and controlled environment	Greenhouse with controlled climate	Controlled environment	Controlled environment	Controlled environment, test fields	Controlled environment And test fields	Controlled environment
Year constructed	2012-2015	1972-1984-1996	2015	2013	1993, upgraded 2003	1973	1995-2017	1978	2016
Type and number of chambers/units, size of units	6 climate chambers, 6 full scale greenhouse cells	15 chambers	117 fixtures/plants	12 compartments ($50m^2$)	6 identical chambers are available (4 *6*3.1m)	16 artifical environments ($10m^2$). 6 conditioned natural daylight (CND; $30m^2$). 4 small chambers ($1m^2$)	22 freezing chambers (0.6-6.3m^2); 15 cooling chambers (6.3-8.8m^2); 62 greenhouse rooms (12-40m^2) 16 phytotron rooms ($12m^2$); 60 growth chambers (0.3-9m^2)	6 day light chamber (10,5m^2); 3 x 2 dark rooms (3,6m^2); 2 S3 rooms, (3,6m^2); 3 Cold rooms, (9,5m^2)	12 Climatized rooms (CR; 11.5m^2) 4 Climatized daylight rooms (DR; 14m^2) 4 Growth rooms (OR; 8$m^{2)}$), 4 Greenhouse rooms (GR; 14m^2)
Type of light sources available	LED near sun up to 900 in climate	HPS (SON-T) Minimum 100	LED and HPS (SON-T) Minimum 200	LED and HPS (SON-T) Minimum 200	Up to: 400 New LED system will be installed	Artificial environment max 300 Chamber max 400	HPI, HQI, SON-T, 50-200. LED in some chambers. Natural light in phytotron and greenhouse rooms	LED lights (0-3000, fluorescent lights max. 200 natural light in phytotrone	CR: CDM 75-600/LED 50-600; DR: assimilation lighting available; OR: T5

Official **Kick-off 24-25 October** in Helsinki

- **Different facilities and research activities within the five NordPlant universities**
- **The networks/facilities around us:** EMPHASIS-PREP/EPPN (Roland Pieruschka); 6P/Nordic Plant Phenotyping Network (Thomas Roitsch) High-throughput image-based shoot phenotyping (Lukas Spichal)
- Affordable Phenotyping (Shawn C. Kefauver))and Omics in climate change (Bruna Marques dos Santos
- **Tomorrow:** Climate Conditions on Berry Composition (Baoru Yang), Low-cost phenotyping down to the microscope scale (Markku Keinänen), Field Phenotyping (Morten Lillemo)
- **Posters**

8 PhD/Post Doc Travel stipends!

- Alexander Koc, SLU
- Amos Samkumar Rajan Premkumar, UiT
- Bruna Marques dos Santos, UCPH
- Dhananjay Kumar, SLU
- Lena Lachner, UiT
- Okanlawon Lekan Jolayemi, SLU
- Sylwia Kacprzak, LU
- Wenjun Xie, UCPH

NOVA
UNIVERSITY NETWORK

Phenotyping technologies in plant environment interactions: **-imaging based phenotyping 10.-14.6.2019**

NOVA teachers:

Kristiina Himanen UHEL Finland (course leader)

Erik Alexandersson SLU Alnarp Sweden

Aakash Chawade SLU Alnarp Sweden

Morten Lillemo NMBU Norway

Invited teacher:

Markku Keinänen UEF Finland

PhD course series "Phenotyping Technologies in Plant-environment Interactions" 2018-2021

NOVA PhD course series "Phenotyping Technologies in Plant-environment Interactions" which is scheduled for 2018-2021:

- **2018: Integrated Analysis of Omics Data [completed]**
  Swedish University of Agricultural Sciences
- **2019: Image Based Phenotyping [10.-14.6.2019]**
  University of Helsinki, Faculty of Agriculture and Forestry
- **2020: High Throughput Field Phenotyping**
  Norwegian University of Life Sciences
- **2021: Omics Technologies in Phenotyping**
  Agricultural University of Iceland

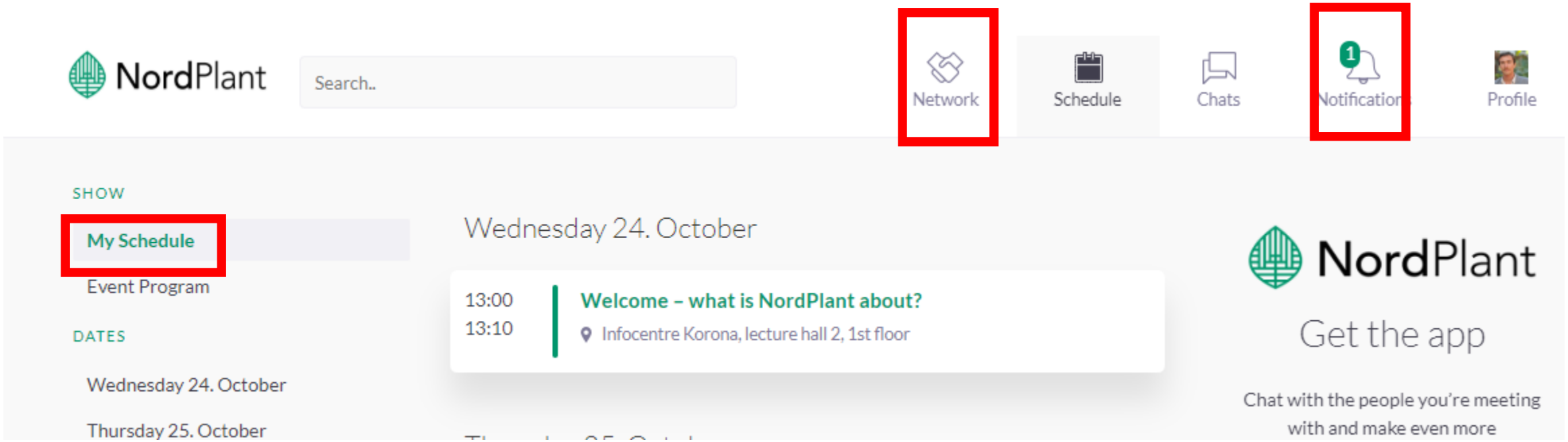
NOVA
UNIVERSITY NETWORK

NordPlant workshop on standards and big data in plant phenotyping with Celia Michotey (INRA)

- 29-30 April in Lund or Copenhagen

Grip event networking App

-Take the chance to network! Add some information on yourself!



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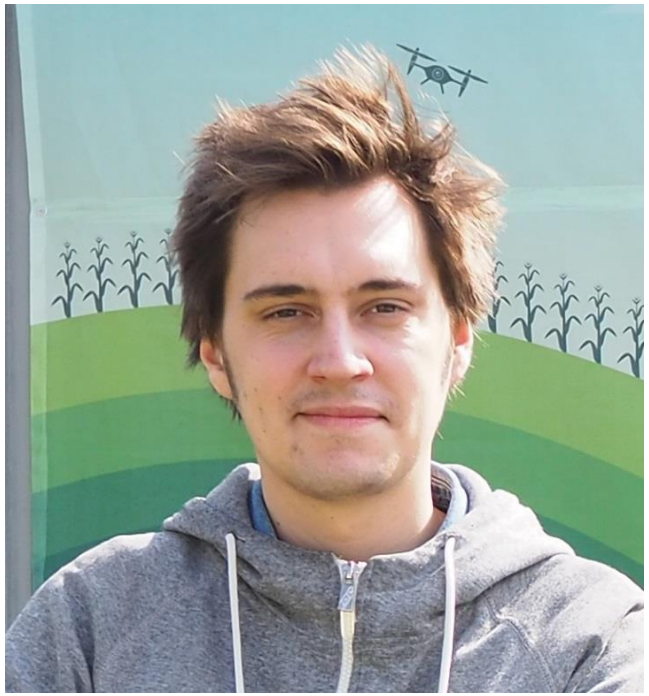
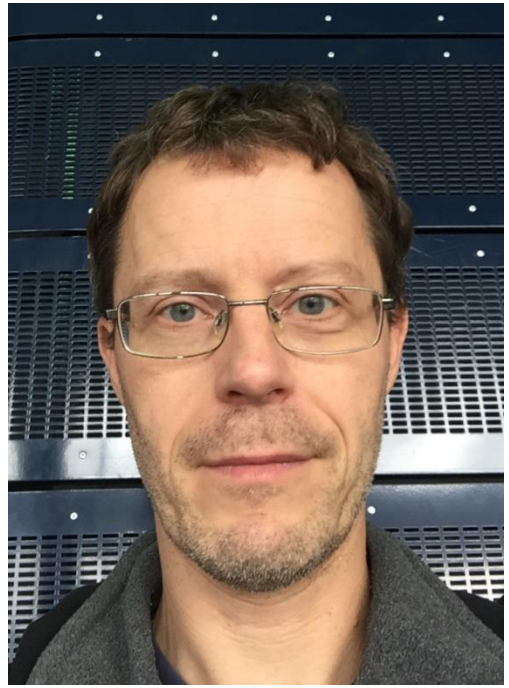
Erik Alexandersson, Coordinator



Alex Koc, Administrative coordinator

Ali Malik



Svante Resjö

Your input is important!

NordPlant

THANK YOU FOR LISTENING!