



Nordic Association of Agricultural Science (NJF), The Nordic Joint Committee for Agricultural and Food Research (NKJ) & NordForsk joint webinar:

Nordic-Baltic perspectives on research collaboration in agriculture, climate change and climate challenges

22 April 2024, 13-15 EEST / 12-14 CEST / 10-12 Icelandic time

Agriculture in Nordic-Baltic region shares common challenges such as short growing season and cold temperatures. Moreover, changes in climate are influencing agriculture and food and feed security in the Nordic and Baltic region in many ways, such as through rising temperatures, changes in precipitation patterns, increased frequency of extreme weather events, and pest and disease risks. Research collaboration within Nordic-Baltic region plays an important role in providing solutions on how the agricultural sector can respond to these challenges and valorize new opportunities.

NJF, NKJ and NordForsk will organize a joint webinar on Nordic-Baltic collaboration in agricultural research. The webinar will highlight the Nordic-Baltic agricultural research and research collaboration as well as introduce an upcoming Nordic-Baltic joint conference on resolving environmental and climate change issues in agriculture that will be organized in Autumn 2024.



Registration to the webinar

We invite all persons who are interested in the topic to join the webinar. The webinar is free of charge, but we kindly ask the participants to register by the 19th of April 2024 by [using this link](#). Persons who have registered will receive a link to webinar a couple of days before the event.

Agenda

- **Three perspectives to Nordic-Baltic agricultural research collaboration (10 minutes per presentation)**
 - A presentation of NJF, Jarkko Niemi, President of NJF
 - A presentation of NKJ, Per Hansson, Secretary of NKJ
 - A presentation of NordForsk, Kyösti Lempa, Special Adviser at NordForsk
 - Questions and discussion
- **Keynote presentations (25 minutes per presentation + 10 minutes discussion)**
 - **Nordic Field Trial Network**, Anneli Lundkvist, Senior Lecturer, the Department of Crop Production Ecology, Swedish University of Agricultural Sciences
 - **Sustainable Agriculture and Forest Production in Future Nordic Climates (NordPlant - UPSCALE)**, Erik Alexandersson, Researcher, the Department of Plant Breeding, Swedish University of Agricultural Sciences
 - Question and discussion

- Introduction of an upcoming Nordic-Baltic joint conference “Resolving Environmental and Climate Change issues in agriculture” (to be organised in October 2024) (5 minutes)
- The webinar will be moderated by Jarkko Niemi, the President of NJF

About the keynote speakers of this webinar:

[Anneli Lundkvist](#) is a Senior Lecturer at the Department of Crop Production Ecology, Swedish University of Agricultural Sciences (SLU). She is also a coordinator at SLU Fältforsk, which is a contact and cooperation body between SLU and external stakeholders for field trial activities in agriculture. She will talk about the Nordic Field Trial Network.

[Erik Alexandersson](#) is a plant molecular biologist at the Department of Plant Breeding, Swedish University of Agricultural Sciences (SLU), studying the plant-pathogen interactions as well as defense mechanisms both in the laboratory and in the field, carotenoids and the biofortification of cassava and automated disease phenotyping at various spatial levels. He is the assistant director of [PlantLink](#), a collaboration between Lund University and SLU Alnarp to strengthen plant research in Southern Sweden, and the coordinator of [NordPlant](#).

About the projects in focus:

[Nordic Field Trial Network](#)

Execution of field trials has been a classic discipline in all Nordic countries for the past more than 50 years. Most field trials are executed by a few institutions. The methods for executing field trials have been well-proven for many years and have a great credibility in the industry and at a high scientific level. The classic execution of field trials must be developed to be able to incorporate and generate more comprehensive answers to the new challenges i.e. the effect on greenhouse, gas production, sustainability. New technical possibilities open up completely new dimensions in the way we work. The challenges are the same across borders, and there is an expressed desire to learn from each other and in collaboration innovate new methods. The network will primarily carry out its activities by holding conferences and workshops, where specialists in the field will be brought together to exchange experiences and develop new methods. The network is coordinated in a collaboration between SLU, NIBIO, SEGES Innovation and the Danish Technological Institute. Everyone is welcome to join the network, and we can offer years of experience in conducting field trials and we are all curious to learn new things.

[NordPlant](#)

Changing climate and degrading agricultural land are global challenges for agriculture and forest production. These pressing issues together with dwindling natural resources will increase the pressure on agri-food systems and forestry at the same time as we have to provide sufficient, safe and nutritious food for a growing world population. For example, warmer and wetter Nordic summers will require new, adapted plants for retained production and yield stability. Milder winters will allow new plant pathogens to migrate north leading to a changed plant pathogen pressure in the Nordic countries. These challenges urgently call for new plant breeding and protection efforts to secure crop and forest production in future Nordic climate conditions.

In the NordPlant consortium, five Nordic universities with versatile and complementing research infrastructures are joining forces to promote education, research mobility and technological development to meet future challenges in agriculture and forestry. Recently established facilities for both plant phenomics and climate modelling are part of this project. Phenomics is a field of research that studies the interactions between genotypes, phenotypes and the environment. Right now this research area is advancing rapidly because of better imaging methods, cheaper and more efficient acquisition of large-scale molecular data and improved modelling capacity with high-performance computers.

To fully take advantage of this better, interdisciplinary collaborations also addressing specific questions for future Nordic climate conditions are needed. To that end, the Nordic countries must mobilize science and

innovation capacity to create a more climate resilient agriculture and forestry sector. We need to develop modern breeding approaches that uses the expanding genomic knowledge on the one hand and the application of different climate scenarios on the other. NordPlant will help in this by forming a foundation of an internationally competitive hub. It will provide education and support the establishment of joint standards and protocols to facilitate sharing of data. Apart from stimulating knowledge-exchange, NordPlant will provide much needed incentives for researchers to use facilities across the Nordic countries. Such incentives will broaden the use of the facilities and advance and optimize researchers individual experiments to answer new, more complex research questions.

NordPlant is funded by NordForsk under the initiative Nordic University Cooperation: Nordic University Hubs.

Upscale

Changing climate and degrading agricultural land are global challenges for agriculture. These pressing issues together with dwindling natural resources will increase the pressure on agriculture providing food for a growing world population. The Nordic-Baltic region spans the most northern area in the world for field cultivation, but is predicted to encounter larger changes than the global average in temperature and precipitation due to climate change.

One way to increase resilience in crop production is to implement automatized ways of monitoring the crop performance out in the field. This can be done by plant phenotyping measuring different agricultural traits such as yield. However, to be truly efficient it needs to be upscaled and cover large areas. This can only be done by remote sensing by satellites which is a rapidly expanding area with a fast development of techniques and increased precision. For this upscaling to be meaningful we do, however, need to know more about the links between the different spatial levels of crop monitoring from the single plants via the field to the level of satellites monitoring large agricultural areas. This linking is the core of the project UPSCALE and will ensure that better and more accurate information can be obtained from satellite imaging.

In the UPSCALE consortium, Nordic-Baltic academic institutions are joining forces to conduct research and technological development. Established facilities for both plant phenomics and climate modelling are part of this project as well as extensive knowledge on satellite imaging. Spectral signatures collected from satellite, field and controlled environments will serve as the source of biosignatures that will be linked and used in prediction models. Field root phenotyping will also form a part of UPSCALE, since we by estimating the root formation can help in binding carbon which in turn can mitigate the climate change due to human carbon emission. The focus is forage in the form of timothy and red clover, spring wheat and potato.

Right now, remote sensing and predicative modelling is advancing rapidly because of better imaging methods and improved capacity using high-performance computers. The Nordic and Baltic agriculture should benefit from that by mobilizing science and innovation capacity creating a more climate resilient agriculture with the help of remote sensing and improved crop modelling.

Upscale is funded by NordForsk under the Programme “Sustainable Agriculture and Climate Change”.