

Report for annual networks

Submit the report to sns@slu.se by 24:00 CET, 1st of March the year after the network period.
The report should not exceed 2000 words.

Please adjust the size of the boxes to the length of your answer.

1. Title of the network:	Nordic Growth and Yield researchers Network
2. Network number:	N2021-04
3. Main applicant:	Latvian State Forest Research institute Silava
Email:	inst@silava.lv
Address:	Rigas Str. 111, Salaspils, LV2169, Latvia

Activities

4. Place of the activities:	Latvia
Duration of the activities (start date, end date):	(actual activities from June 2021-June 2022)

5. Provide a short network summary, including:

a) The purpose of the network/main problems/background

The main aim of the network is information and knowledge exchange and fostering of dialogue among Nordic-Baltic growth and yield researchers. This region shares many challenges faced by contemporary forest management, therefore, exchange of research results and practices may be of great importance in reaching the overall sustainability goals in the region. Against the backdrop of the high demand for bioenergy, contrasted with biodiversity concerns, the issues related to intensification of forest management need to be solved with care. Scientifically sound information is crucial for good decision-making, and, to achieve this, both long- and short-term effects have to be considered. Therefore, information exchange about historical and ongoing studies and their results may facilitate a meaningful dialogue among researchers from Nordic and Baltic countries, further resulting in multilateral collaboration. The recent challenges, both climate- and health-related, have demonstrated the need to balance different ecosystem services from forests through multidisciplinary approach to research and management planning, and growth and yield studies may be a meaningful component of this approach.

b) A description of the main activities of the network

The aim of the network was to organize an international scientific conference, bringing together growth and yield researchers and PhD students working with this topic from Nordic-Baltic region and providing them with a discussion platform. The conference was twice rescheduled due to COVID-19, to allow in-person participation, and was held from 7th to 9th June 2022, in Latvia. It was organized as a hybrid event, with 34 registered on-site participants and 4 registered online participants from seven countries: Sweden Finland, Estonia, Lithuania, Latvia, Norway and Brazil.

The conference programme included oral and poster presentations and field trips to research objects.

June 7, 2022

Morning session – conference opening and presentations. The topics of the first day covered growth modeling of boreal and hemiboreal tree species, tree regeneration and tree growth in relation to air quality and GHG measurements.

Afternoon session – field trip with presentations in the forest. We visited progeny trials of birch, hybrid aspen, spruce, alder and other species, including tests of interaction effects: clone x fertilization, genotype x plant material.

June 8, 2022

Full day field trip to research objects. We visited pine genetic resources stand, provenance, progeny, and genetic gain trials of Scots pine and lodgepole pine, progeny trials of Scots pine and lodgepole pine, demonstration site for wind damage assessment in the forest, trials of several introduced tree species and one of the first forest drainage sites in Latvia. We discussed such topics as the long-term effect of forest drainage on greenhouse gas emissions and storage and tree growth, productivity of native and introduced tree species, abiotic and biotic risks and their dynamics in the result of the climate change, factors affecting wind damages in hemiboreal forests, as well as wider implications of growth and yield studies on the climate change mitigation policies. Generally, the selected research sites represented typical forests for hemiboreal conditions, and presented studies included the main currently topical challenges of growth and yield studies. Live streaming of the field trip was provided for on-line participants.

June 9, 2022

Morning session – presentations. The topics of the second day covered the effects of climate change on tree growth, incorporation of growth models in decision support systems, thinning alternatives and growth and timber quality issues.

Outcomes

6. Published outputs achieved as a consequence of the network (peer-reviewed articles, other publications)

The conference results are summarized in the conference book of abstracts (ISBN 978-9934-603-09-9; available here

http://www.silava.lv/userfiles/file/Pasakumi/2022_06_07_Conference_SNS%20Growth%20and%20Yield%20researchers%20Network_Book%20of%20Abstracts.pdf), containing abstracts of oral and poster presentations.

7. Other practical outputs of the network (workshops, conferences, scientific meetings, policy recommendations, conferences, large-scale project applications, websites or databases etc.)

The aim of the network was specifically the organization of the bi-annual conference of growth and yield researchers in Nordic-Baltic region.

8. How and within which areas was the network beneficial for the Nordic region (Denmark, Finland, Iceland, Norway, Sweden and the autonomous areas of the Faroe Islands, Greenland and Åland Islands)?

The conference organized within the frames of the network of growth and yield researchers brought together academics and students from seven countries for the exchange of most recent research results and discussion on the following topics: improvement of forest growing conditions, fast-growing trees and fast growing of trees, climate change and forest growth, benefits and risks of intensified forest management. It provided a platform for PhD students, postdocs and young researchers to share their research results in a supportive atmosphere and to receive feedback and suggestions from more experienced colleagues.

g. Provide a popular science piece for dissemination in SNS' various channels (maximum 700 words) *with emphasis on application of results and benefits for the Nordic society*.

Provide pictures (size at least 500x500 pixels and resolution at least 72 pixels) as separate files (.jpg). Include caption to each picture, including the name of photographer.

After repeated rescheduling due to COVID-19, this summer the Nordic Growth and Yield researchers Network was finally able to organize its long-expected bi-annual conference. It took place in Latvia in the beginning of June and brought together 37 participants from Sweden, Norway, Finland, Estonia, Latvia, Lithuania and Iceland. Most people attended the event in-person, but hybrid attendance possibilities and even livestream of field trips were provided. During three days of presentations, field trips and active discussions we learned about the most recent research developments in the area of forest growth and yield studies in Nordic-Baltic region.

Long-term and large-scale monitoring data that cover a wide range of forest site types and age classes are instrumental for developing mathematical equations for calculating the current forest productivity, as well as predicting the development of the forest stands in the future.

Balancing forestry operations with nature considerations will be one of the most important challenges for forest management in Nordic-Baltic region during the following years. The conference participants introduced their research results on some alternative forest regeneration methods with different levels of nature consideration (natural regeneration and sowing and prescribed burning), as well as an innovative biomass harvesting approach to replace pre-commercial thinning.

Another topic that we discussed during the conference, especially during the field trip, was tree breeding, i.e., selecting and propagating the best (in terms of productivity and resilience towards adverse environmental factors) "parent" trees. In the light of more unpredictable climate, more frequent temperature and rainfall extremes, it may be necessary to consider planting non-native tree species that are faster growing and more resilient. Already decades ago researchers have established trials of introduced conifers and broadleaves, and their growth measurements now provide much-needed information on productivity of these species and risks affecting them.

Our forests suffer from different damages, such as insects, fungi and wind. Several presentations touched on these topics, and during the field trip we visited a Norway spruce stand and watched a demonstration of artificial uprooting experiment where trees are being pulled with a winch and the applied pulling force along with other parameters are measured. These experiments are needed to model the actual windbreaks and to determine factors affecting the risk of the forest to suffer from wind damage, for example, tree species, root system size, soil type and soil temperature.

Even though the Nordic-Baltic region is very diverse, we share many of the same challenges related to forest management, as forests are, or are increasingly becoming, an important economic resource and also a significant tool to counter and reduce the negative effects of the climate change by storing carbon in soil and biomass. In this regard, faster-growing tree species, as well as trees selected from genetically superior parents may be of particular interest.

The conference was not only a great opportunity for the participants to come together and discuss their work, but also a platform for students and post-doctoral researchers to share the results of their research in a friendly and supportive environment and to receive feedback and suggestions from more experienced colleagues.

The contacts established during the conference will be an excellent stepping-stone for further multi-lateral collaboration in the region. We are looking forward to meet in the next event in two years – this time, in Estonia!



Conference participants in a research trial in Norway spruce stand. Photo: Jānis Vuguls



Conference participants in a Scots pine progeny trial. Photo: Jānis Vuguls

Participation and inclusion in the network activities

10. Participants								
Country	PhD students & Post-docs	Other researchers	Stakeholders	Communication officers	Gender			Total
					Women	Men	Other	
Denmark								
Finland	1	1				2		2
Iceland		1				1		1
Norway		2			1	1		2
Sweden	7	4			6	5		11
Estonia	2	3			1	4		5

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Lithuania	1					1		1
Latvia	9	6			4	11		15
Brazil		1				1		1
...								
...								
Total								38

Economic report

11. Received grant from SNS (SEK):

200 000 SEK

12. Costs	SNS funding	Co-financing	Total
Travel and accommodation	53 070	60 000 (labour)	113 070
Meeting costs	138 876	130 000 (labour)	268 876
Communication		20 000 (labour)	20 000
Other costs (specify)			
Total SUM (SEK)	191 946	210 000	401 946

13. Allocation of SNS funding

Country	Partner organization	SEK	% of total
Finland	Natural Resources Institute Luke, Dr. Saija Huuskonen (Saija.Huuskonen@luke.fi)	4 455	2.3
Sweden	Swedish University of Agricultural Science (SLU), Dr. Emma Holmstrom (emma.holmstrom@slu.se)	18 142	9.6
Norway	Norwegian Institute of Bioeconomy Research (NIBIO), Dr. Paul McLean (paul.mclean@nibio.no)	5 316	2.7
Estonia	Estonian University of Life Sciences (EMU), prof. Andres Kiviste (andres.kiviste@emu.ee)	6 768	3.5
Latvia	Latvian State Forest Institute "Silava", Dr. Zane Libiete (zane.libiete@silava.lv)	157 265	81.9
Total SUM		191 946	100.0

14. Economic result (deficit or surplus)

Surplus 8 054 SEK

Optional: Comments to the economic reporting

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I hereby declare that the above statements are true to the best of my knowledge

Signature of the main applicant



LSFRI Silava, Latvia

30.09.2022

Signature

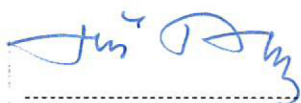
Organization

Date

Zane Lībiēte, researcher

Printed name

Signature of the department head at the department of the main applicant



LSFRI Silava, Latvia

30.09.2022

Signature

Organization

Date

Jurgis Jansons, director

Printed name

Second applicant's signature, place and date



Signature

Saija Huuskonen

Printed name

Natural Resources Institute, Luke,
Finland

Organization

29.9.2022

Date

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Third applicant's signature, place and date



Swedish University of Agricultural
Sciences (SLU), Sweden

7/10 - 2022

Signature

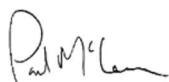
Organization

Date

Emma Holmstrom

Printed name

Forth applicant's signature, place and date



Signature

Paul McLean

Printed name

Norwegian Institute of Bioeconomy Research (NIBIO)

Organization

Date 29.09.2022

Report for annual networks

Fifth applicant's signature, place and date



Estonian University of Life Sciences

30.09.2022

Signature

Organization

Date

Andres Kiviste

Printed name