

Choosing the tree species and provenance. What is feasible?

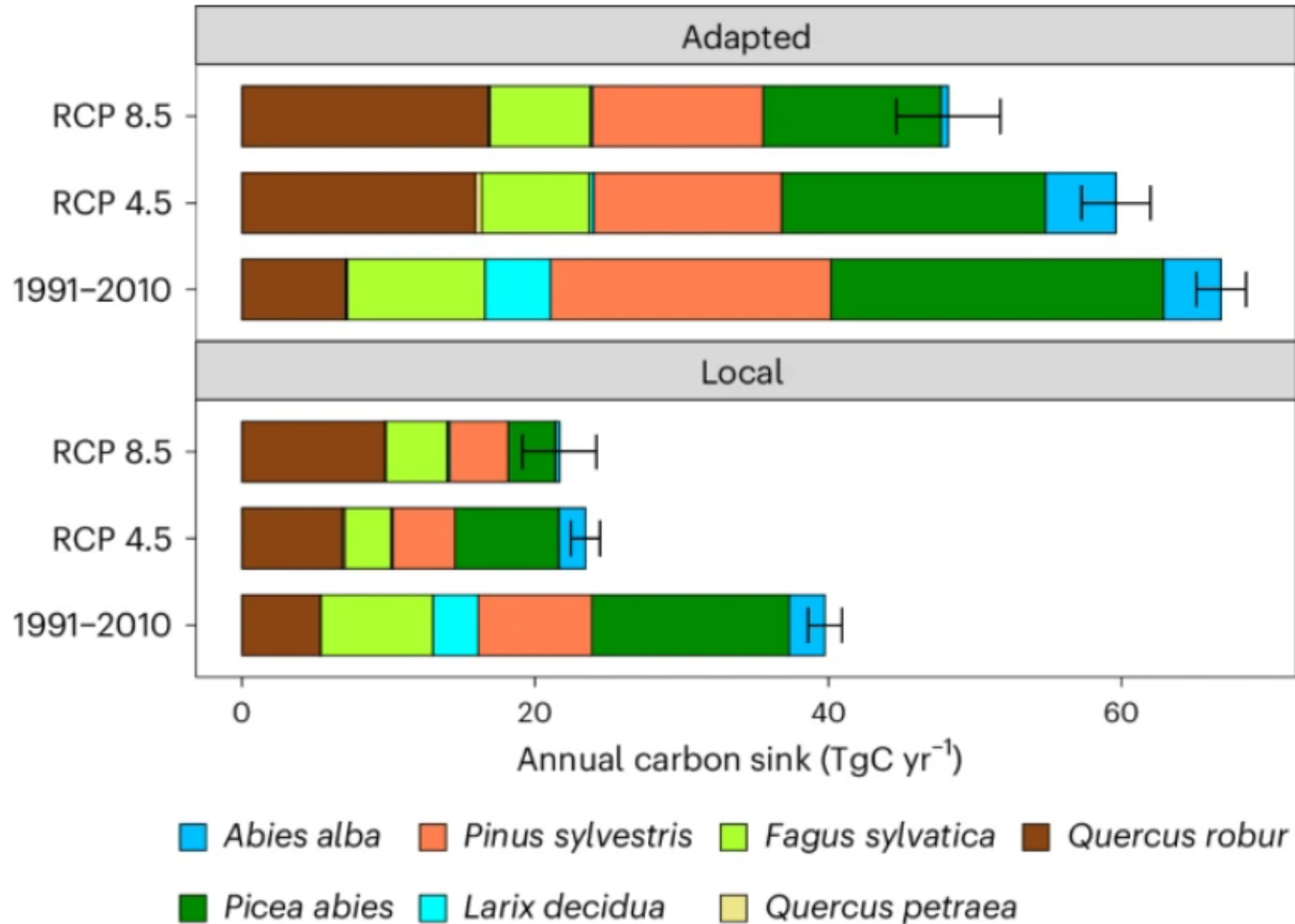
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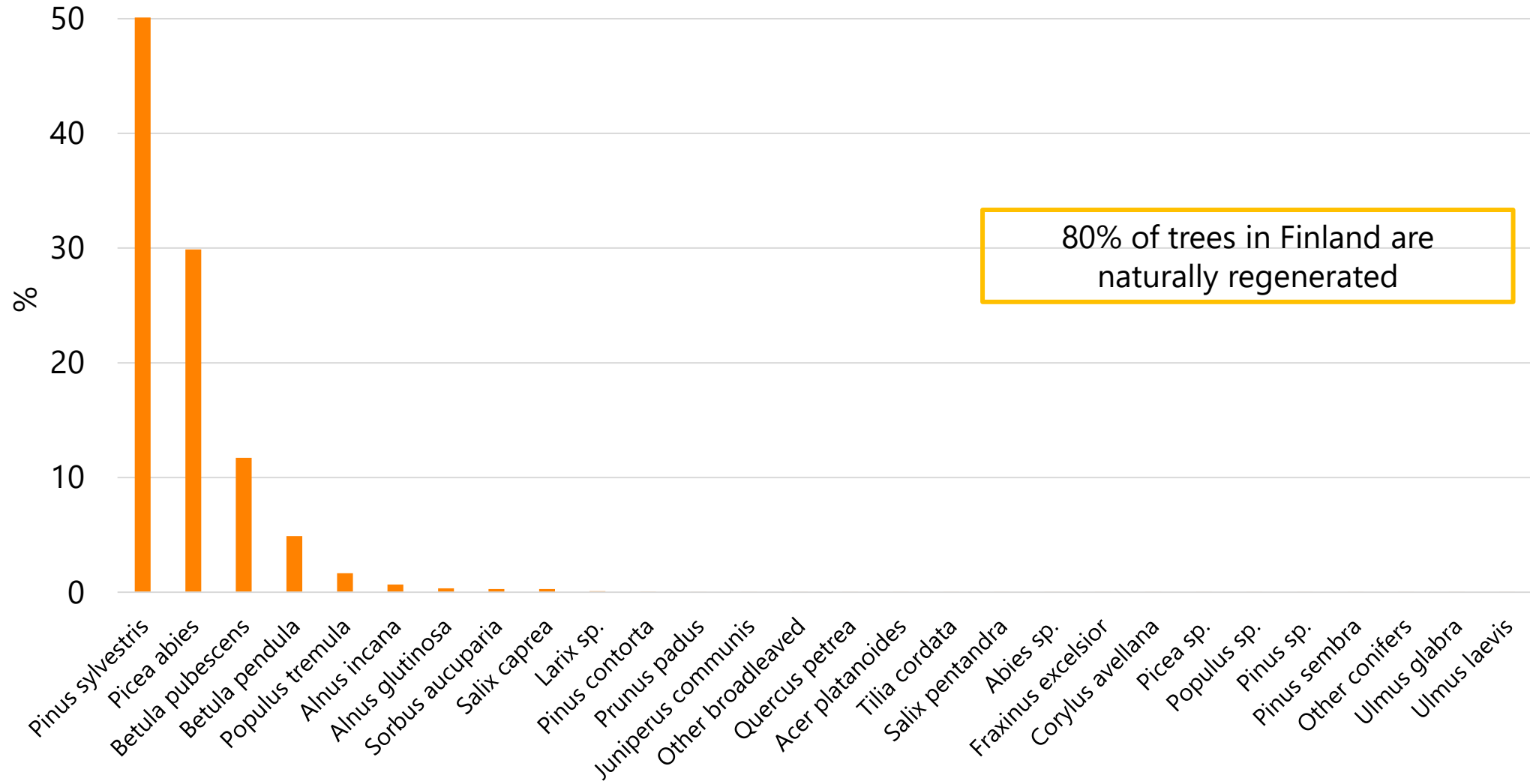
Workshop on Forest Guidelines in the
Boreal Region, Jan 28 2025



Fig. 2: Effects of assisted migration on the annual CS of European forests.



Proportion of tree species of total growing stock in Finland



[Korhonen K. T., Ahola A. et al. \(2021\) Forests of Finland 2014–2018 and their development 1921–2018](#)

The need for diversifying the species selection in silviculture in northern Europe

- Supporting biodiversity
- Decreasing the chance of major pest outbreaks

The need for choosing the best provenance

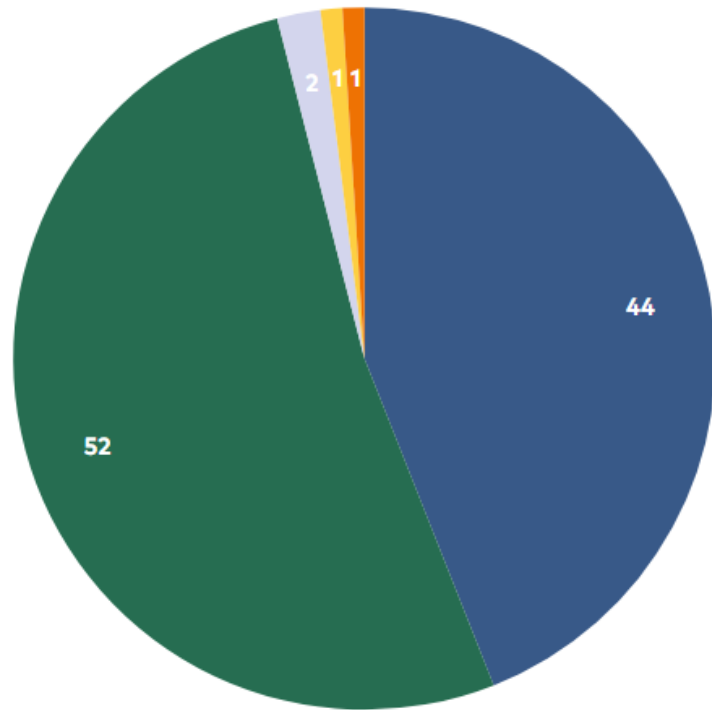
- Supporting the carbon sinks and availability of renewable materials
- Supporting local economies and preventing the leakage of forest harvest

The current status of plantings in the Nordic countries

<https://publication.nordgen.org/Forest-Seeds-and-Plants-Statistics-v2023/overview-of-the-most-important-species-in-each-country.html>

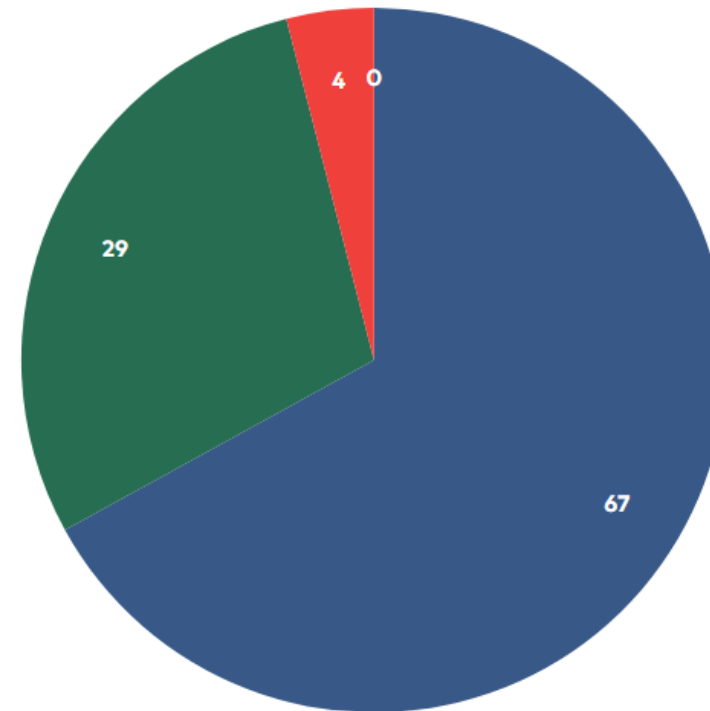
Sweden

452.000.000 seedlings in total



Finland

152.088.000 seedlings in total



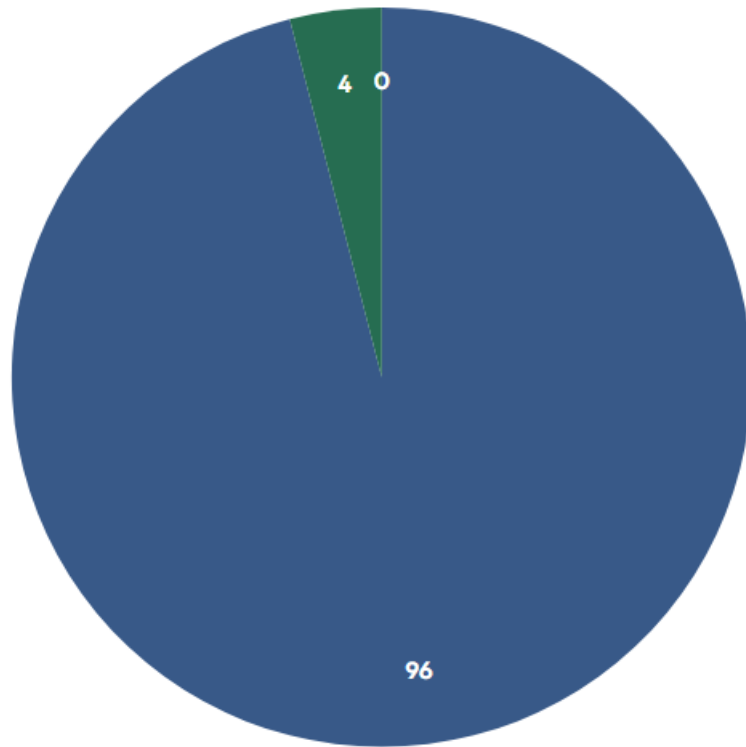
■ Picea abies ■ Pinus sylvestris ■ Pinus contorta ■ Larix spp.
■ Other

■ Picea abies ■ Pinus sylvestris ■ Betula pendula ■ Other

The current status of plantings in the Nordic countries

Norway

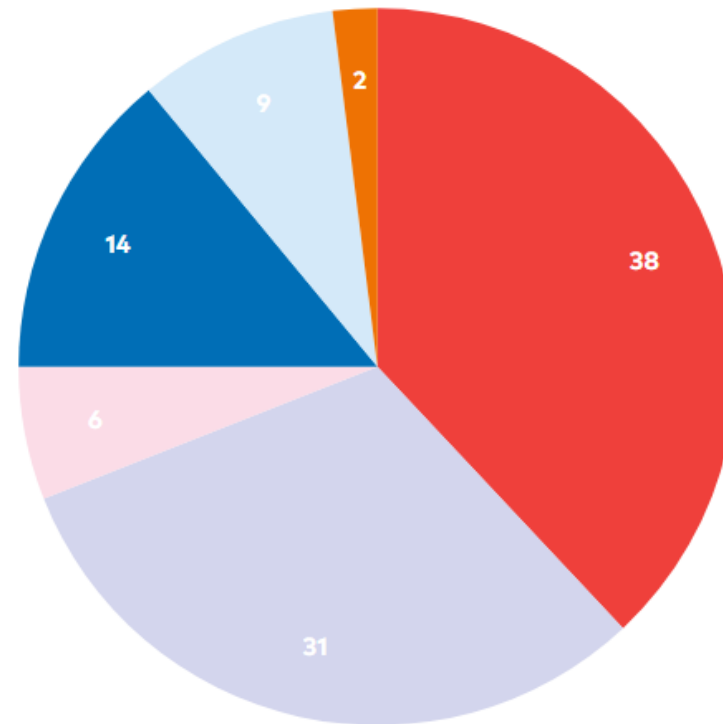
45.502.000 seedlings in total



■ Picea abies ■ Pinus sylvestris ■ Other

Iceland

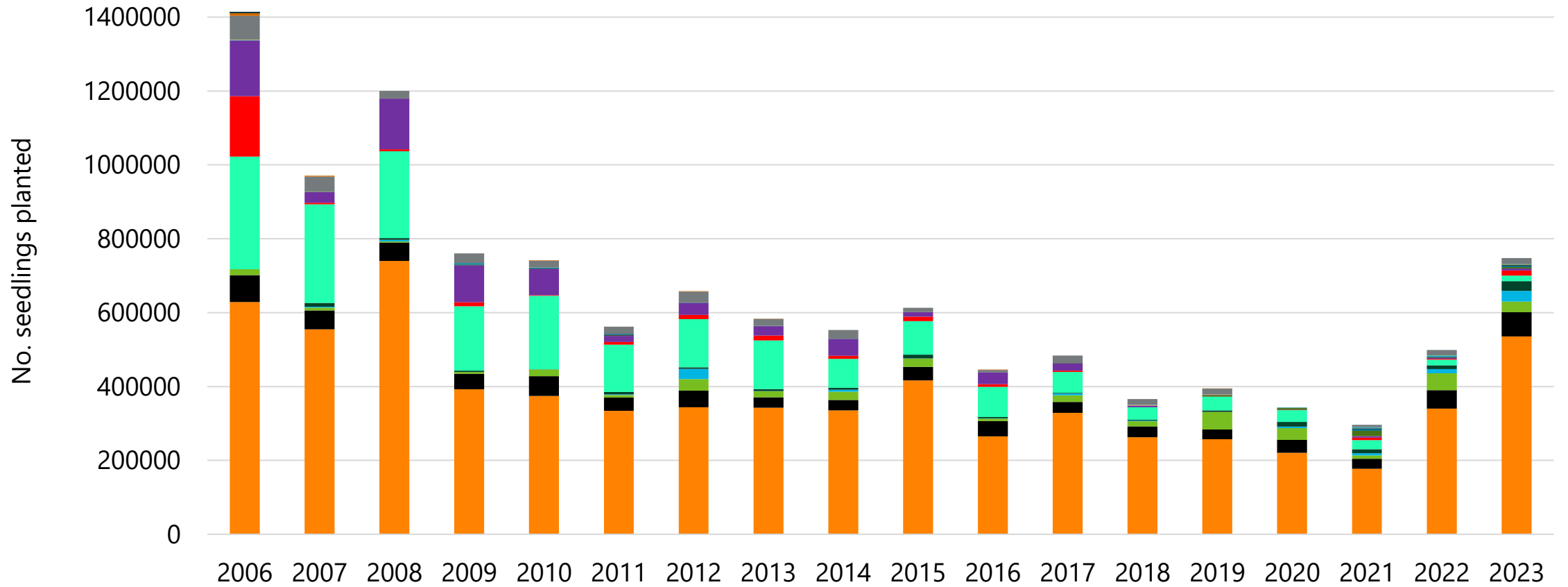
5.319.000 seedlings in total



■ Betula pubescens ■ Pinus contorta ■ Larix sibirica
■ Picea sitchensis ■ Populus trichocarpa ■ Other

<https://publication.nordgen.org/Forest-Seeds-and-Plants-Statistics-v2023/overview-of-the-most-important-species-in-each-country.html>

- Lehtikuusi (*Larix* sp.)
- Kontortamänty (*Pinus contorta*)
- Hybridihaapa (*Populus x wettsteinii*)
- Harmaaleppä (*Alnus incana*)
- Kynäjalava (*Ulmus laevis*)
- Pyökki (*Fagus sylvatica*)
- Pihdat (*Abies* sp.)
- Tervaleppä (*Alnus glutinosa*)
- Tammi (*Quercus robur*)
- Hieskoivu (*Betula pubescens*)
- Visahaapa
- Metsälehmus (*Tilia cordata*)
- Saarni (*Fraxinus excelsior*)
- Pihlaja (*Sorbus aucuparia*)
- Douglaskuusi (*Pseudotsuga menziesii*)
- Visakoivu (*Betula pendula* var. *carelica*)
- Haapa (*Populus tremula*)
- Vuorijalava (*Ulmus glabra*)
- Vaahtera (*Acer platanoides*)
- Muut kuuset (*Picea* sp.)



Current development

- In the recently updated national plan for establishing seed orchards the need for diversifying the tree species selection is recognized.
- In addition of *Picea abies*, *Pinus sylvestris* and *Betula pendula*, seed orchards need to be maintained or established for
 - *Larix archangelica*
 - *Quercus robur*
 - *Alnus glutinosa*
 - *Betula pubescens*
 - *Tilia cordata*
 - *Acer platanooides*

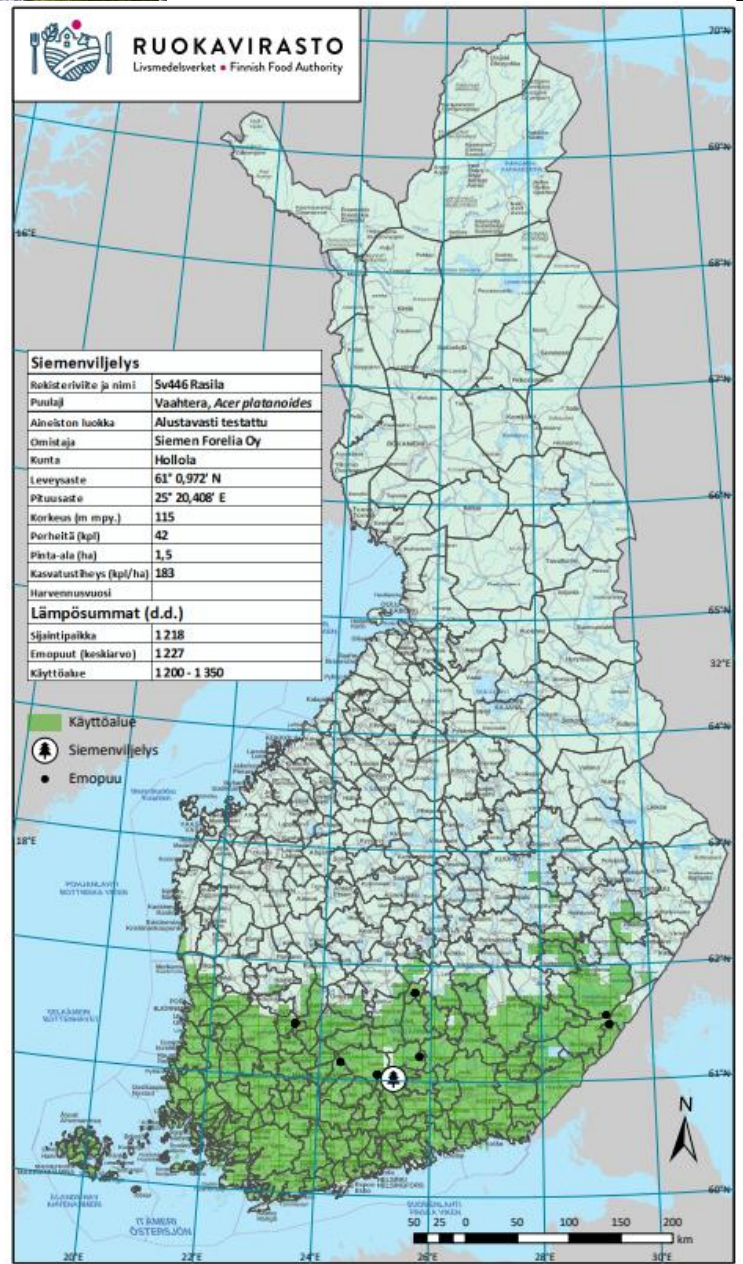


Maa- ja metsätalous-
ministeriö

JUKKA ANTOLA
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NIINA STENVALL

Metsänjalostuksen hyödyt käytäntöön – metsäpuiden siemenviljelysten perustamishjelma 2060

MAA- JA METSÄTALOUSMINISTERIÖN JULKAISUJA 2023:19



OptFORESTS is a Horizon Europe project funded by the European Union to enhance diversity and resilience of future European forests

INRAE



Funded by
the European Union



PARTNERS

OptFORESTS is composed of 19 European partners. The institutions in partnership include a comprehensive range of:

- Universities, research centres, international organisations, national forest agencies and environmental consulting firms.
- European countries Austria, Bulgaria, Denmark, Czech Republic, France, Finland, Germany, Italy, Norway, Romania, Slovenia, Spain and Switzerland.

PROJECT INFO

- **Budget:** 8 million €
- **Project duration:** 5 years - 1 November 2022 to 31 October 2027

OUR MISSION

OptFORESTS' mission is to develop both forestry and socio-cultural knowledge in order to be able to use more tree species in forestry, contribute to forest restoration and increase the production capacity of forest nurseries in Europe. To achieve this, OptFORESTS works on the following thematic lines:

28 next-generation common gardens

- Provenance and species mixtures.
- Unique tree lineages for future climate change adaptation and forest biodiversity research.

FRM adaptable to future climates

- Recommendations for deployment of adaptable forest reproductive material (FRM).
- Unique tree lineages for forest ecosystem restoration and management.

Ecosystem restoration projects

- Enrichment plantations in declining forests.
- Demonstration plots in ecosystem restoration projects.
- In six countries, in cooperation with local stakeholders.

FGR-oriented forest management

- New genetic module for training software (marteloscopes) simulating the impact of silviculture on genetic diversity.
- Integrate evolution thinking in forest management.

Strengthening the nursery sector

- Proposals, based on sector analysis and demand forecasting, to expand capacity and increase cooperation among nurseries.
- Technical developments.

Optimising genetic diversity use

- Low-input breeding strategies.
- Optimised use of genetic diversity for adaptation.
- Aim to establish and manage new mixed forests.

Enhancing FGR-based biodiversity

- Socially acceptable adaptive solutions.
- Improve biodiversity and ecosystem services based on forest genetic resources (FGR).

Supporting decision-making

- FOREMATIS and EUFGIS Information Systems linked.
- Support end users to make decisions about where to source or plant FRM.

Current development

A comprehensive status report of the European nursery sector is under way covering seed production and seedling nurseries in 30 countries.

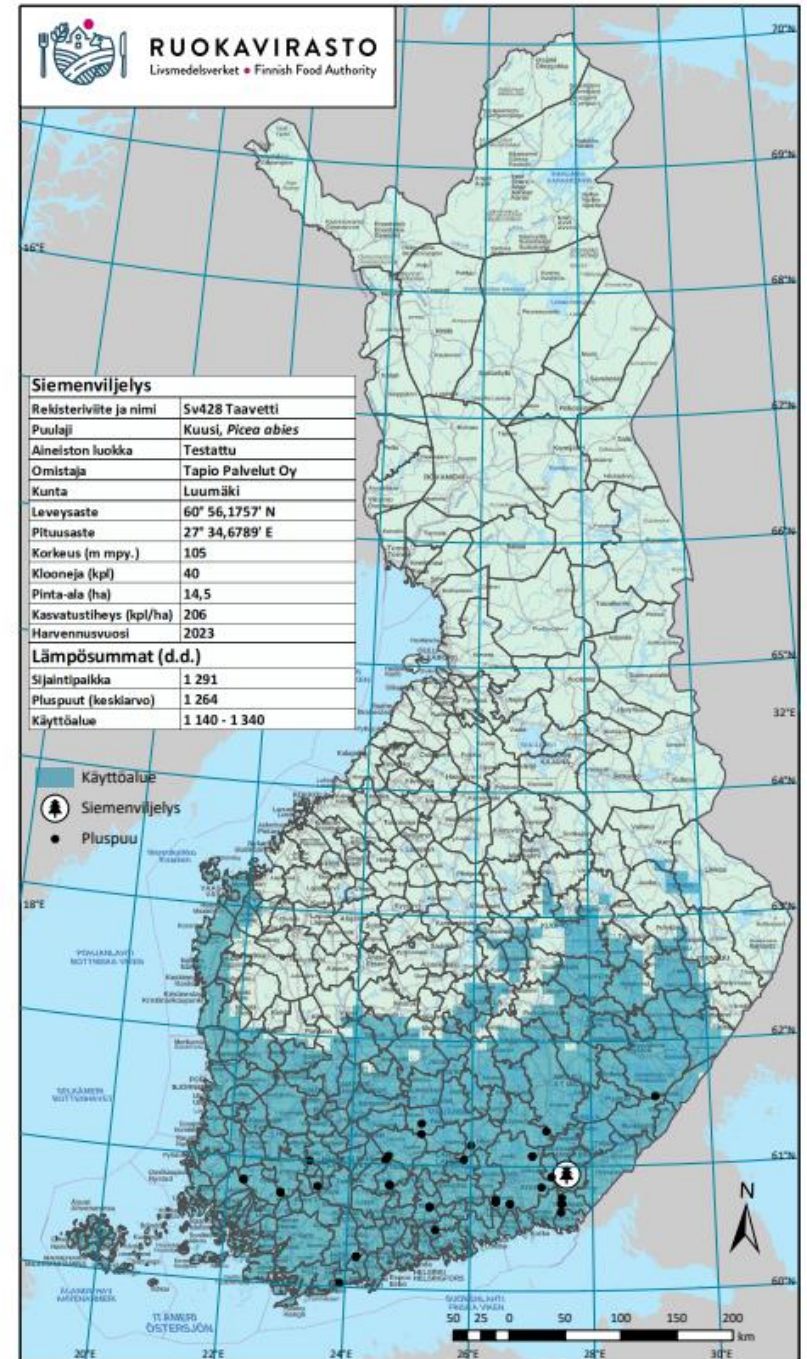
The aim of the report is to evaluate the expansion capacity of seedling production and pinpoint bottlenecks limiting seed availability and diversifying the species selection.



Konrad, H. et al. (unpublished)

Choosing the provenance

- In the Nordic forestry there is a longstanding tradition of choosing a well-adapted provenance for forest regeneration.
- The science behind the transfers and 'assisted migration' is solid and practical guidelines and tools are available



Plantval

Vi ville visa en video för dig, men kan inte det för att du ställt in att inte tillåta kakor. Var god tillåt Marknadsföringskakor för att kunna se videon.

Acceptera Marknadsföringskakor

Plantval är ett verktyg som hjälper dig att välja rätt skogsodlingsmaterial. Verktuget rangordnar materialen efter deras beräknade produktion på den aktuella lokalen. Titta gärna på filmen.

Välj trädslag

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Vilpas - Metsänviljelijän opas

Metsä ja metsätalous

Metsänviljelijän opas (VILPAS) auttaa metsänviljelyaineiston valinnassa järjestämällä männyn siemenviljelys- ja metsikkösiemenerät niiden ennustetun tuotoksen mukaiseen paremmuusjärjestykseen.

Metsänviljelijän opas on toteutettu Luken ja Skogforskin (Ruotsi) yhteistyönä EU-projekteissa NovelTree ja B4EST.

[➤ Vilpas - Metsänviljelijän opas](#)

What is feasible?

- The number of natural tree species is low.
- Limited restoration and afforestation tradition. The availability of seeds and seedlings is tied together with silvicultural practices.
- Slow transformation. It takes years or even decades to produce significant amounts of seed from previously marginal species or novel provenances.
- The economic profitability of marginal species is very poor. Creating an outlook for their value would be helpful. Subsidies only go so far.
- There is a need to gain experience of the marginal species in all steps of producing FRM. This too takes time.

Positive features

- A long tradition of silviculture: producing high quality seed, selecting provenances etc. is nothing new. This helps in the change.
- Nordic silviculture relies on domestic species
- The FRM is genetically diverse and this has been of high interest from the beginning
- There is an increased interest to diversify the species selection and to utilize the marginal species due to pest outbreaks etc.
- National and international projects are ongoing to assist in diversifying the species selection and to support maintaining the genetic resources.
- Strong, existing international scientific collaboration

Thank you for your attention!



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