

# SCOTS PINE (*PINUS SYLVESTRIS* L.) REGENERATION IN LATVIA: PATTERNS, CHALLENGES, AND FUTURE PROSPECTS – A REVIEW

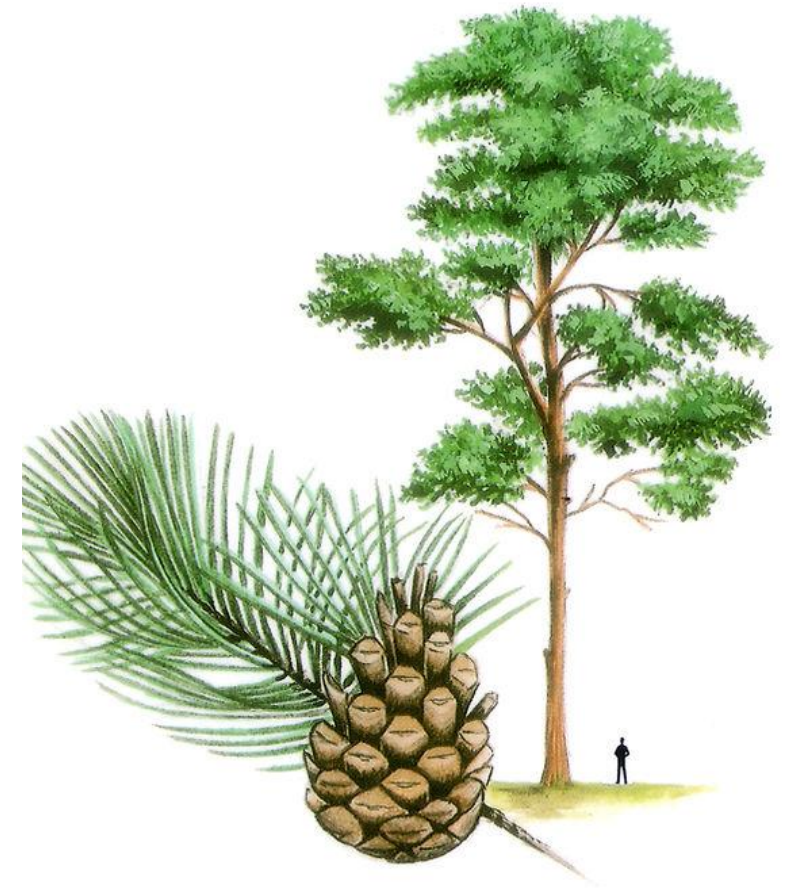
Latvian State Forest Research Institute "Silava"

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# Introduction

- Across Europe, Scots pine forests cover more than 28 million ha, accounting for over 20% of the continent's productive forest area.
- ~ 33% of Latvia forestland is Scots pine-dominated, followed by Silver birch and Norway spruce.
- In Latvia state-managed forests (managed by JSC «Latvia state forests»), Scots pine is dominant tree in 45% of stands, whereas broadleaved tree species are clearly predominant in private owned forests.



# *Scots pine breeding programme*

Priorities: boost growth and productivity; improve wood quality; enhance stress resistance; maintain genetic diversity; match seed origin to site.

1<sup>st</sup> generation orchards (1970s): established using plus trees selected from the best natural stands.

2<sup>nd</sup> generation orchards (2000's -): based on tested families and clones, achieving up to 20–25% higher growth and straighter stems.

Future: 3<sup>rd</sup> generation orchards, genomic-assisted breeding, and international collaboration.

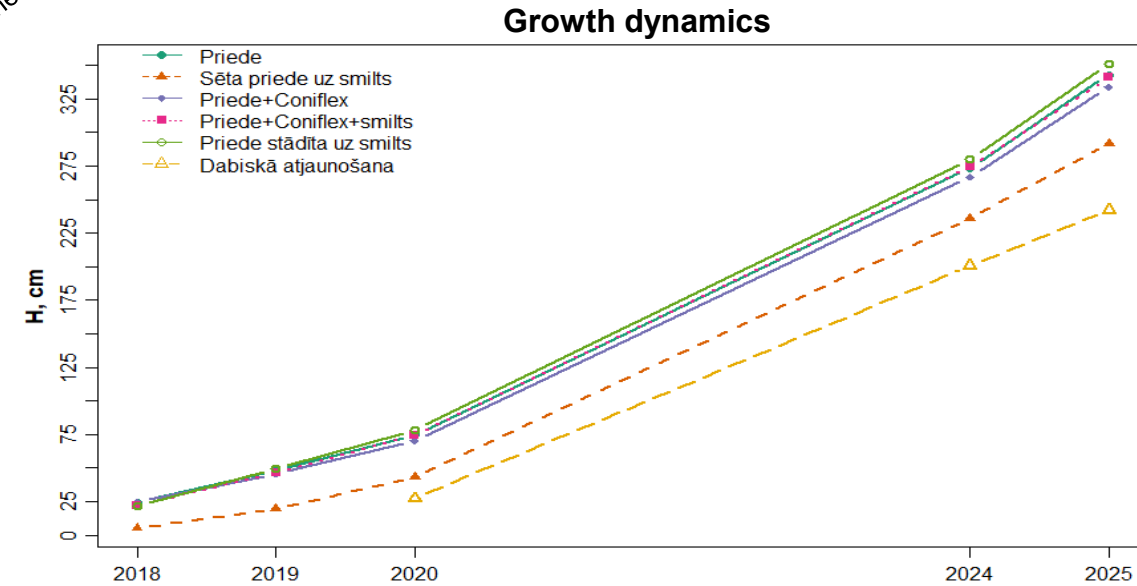
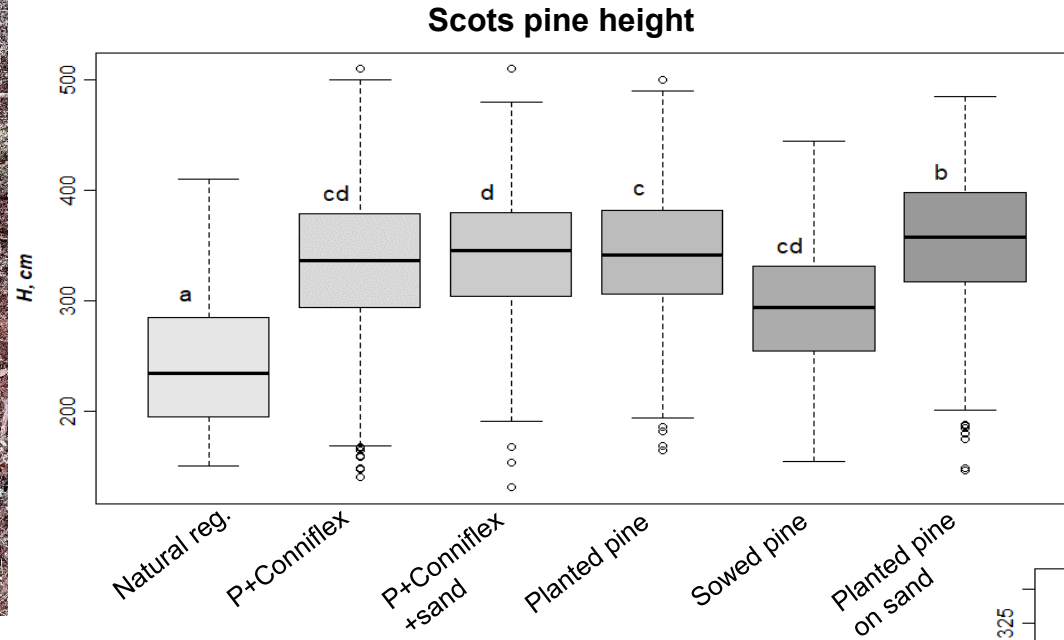
# Regeneration

- 93% of all regenerated Scots pine areas were established through planting in state forests. (2023 data)
- Direct seeding is cost-efficient on sandy soils but risky due to variable germination and seedling survival.
- Natural regeneration: Low-cost but limited by low germination, high early mortality, and competition from understory.
- Continuous-cover forestry (CCF) provide cost-effective, ecologically resilient options, supporting natural regeneration while maintaining biodiversity, carbon sequestration, and recreational value.





# Experiment in Latvia



# Threats

Young trees <20 years old that suffer the most from ungulate damage.

- » *Trico* or *Cervacol Extra*, *Plantskydd*
- » Fencing
- » Individual stem protection



Large pine weevil damage (*Hylobius abietis* L.) risk is significantly high during the first one to three years after seedling outplanting.

- » *Conniflex*
- » Soil preparation
- » Remove logging residuals



# *Future perspective*

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- Scots pine will remain a cornerstone of Latvian and Baltic forestry.
- Artificial regeneration (planting) will continue to dominate, ensuring reliable stand establishment and opportunities for genetic improvement.
- Mixed-species forests enhance resilience to biotic and abiotic stressors, while sustainable ungulate management is essential to reduce browsing impacts and protection costs.

Ačiū!  
Paldies!  
Thank you!



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