A new master plan for forest tree seed production in Finland

NSFP-temadag
11.2.2005 Jyväskylä
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Working group 2003-2004

- A working group appointed by the ministry of agriculture and forestry
  - Need for forest tree seed 2005-2030?
  - Seed production plans?
  - Costs of seed production?
  - Roles of state and seed producers?
- Forest seed production: business and/or public service?
Need for tree seed 2030

- National forest inventory data
- Site characteristics -> tree species, regeneration methods (natural, planting, direct seeding)
- Age distribution of forests -> potential regeneration area, recommended rotation times
- Roundwood markets in the future -> ???
- Opinions and visions of forestry professionals - > likely trends in forest regeneration
- Current area of annual cuttings (1999, 2002)
- Objectives of regional forestry plans
Need of tree seed

• all seed for nursery use from seed orchards when possible
• 50 % of seed for direct seeding from seed orchards (25 % Scots pine ROPs 6-7)
• need for good Norway spruce seed is increasing
Liite 7. Metsäpuiden siementarpeen arviinnin vaiheet. **HUOM!** Lapin metsäkeskuksen toimialueella metsänistutuksissa suositellaan käytettäväksi kuvassa esitettyjä lukuja suurempia taimitiheyksiä (mänty 2 500 ja kuusi 2 000 tainta hehtaarille).

![Diagram of forest management needs assessment criteria](image-url)
Need of tree seed

- **Norway spruce seed**, nursery use
  - regions of provenances 1-6
  - total of 1 959 kg/year
  - 100 % bred seed: ROPs 1-4
  - 50 % bred seed: ROP 5
  - 0 % bred seed: ROP 6
Need of tree seed

- **Scots pine seed**, nursery use
  - ROPs 0-11
  - total of 563 kg/year
  - 100 % bred seed: ROPs 0-9
  - 0 % bred seed: ROPs 10-11
Need of tree seed

- **Scots pine seed**, direct seeding
  - ROPs 0-11
  - total of 7 459 kg/year
  - 50 % bred seed: ROPs 0-5
  - 25 % bred seed: ROPs 6-7
  - 0 % bred seed: ROPs 8-11
## Seed orchards: Norway spruce

- All seed orchards established by 2015
- ROP  | total area needed to be established |
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>75</td>
</tr>
<tr>
<td>2</td>
<td>118</td>
</tr>
<tr>
<td>3</td>
<td>58</td>
</tr>
<tr>
<td>4</td>
<td>19</td>
</tr>
<tr>
<td>5</td>
<td>21</td>
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</tbody>
</table>

Total  | 290 ha | 192 ha |
Seed orchards: Scots pine

- All seed orchards established by 2020
- ROP total area needed to be established

<table>
<thead>
<tr>
<th>ROP</th>
<th>Total area needed (ha)</th>
<th>Total area established (ha)</th>
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</thead>
<tbody>
<tr>
<td>0-1</td>
<td>81</td>
<td>32</td>
</tr>
<tr>
<td>2</td>
<td>92</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>118</td>
<td>36</td>
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<tr>
<td>4</td>
<td>134</td>
<td>118</td>
</tr>
<tr>
<td>5</td>
<td>65</td>
<td>35</td>
</tr>
<tr>
<td>6-7</td>
<td>42</td>
<td>42</td>
</tr>
<tr>
<td>8-9</td>
<td>75</td>
<td>0</td>
</tr>
</tbody>
</table>

Total 612 ha 273 ha
Profitability of seed production

- High establishment costs
  - land, clones, expertise ...
- Orchards need active tending and management
- First seed crops after 10-20 years
  → Seed orchard is not a tempting business investment
  → Needs to be subsidized by the state
- Secure supply of forest reproductive material
- Sustainable forestry, forestry act (obligation to secure regeneration)
Profitability of seed production

• Economical analysis of seed orchard as an investment
• How much state subsidies is needed?
• Costs and benefits during the entire life span of a seed orchard
• So far the state has financed 100% of establishment and tending of young orchards (except costs of buying the land)
KUUSI Kumulatiivinen nettokassavirta

Vuodet

€/ha

-15000 -10000 -5000 0 5000 10000 15000 20000

nyk
ykk 0
ykk 85 %
MÄNTY
Kumulatiivinen nettokassavirta

Vuodet

€/ha

-12000 -10000 -8000 -6000 -4000 -2000 0 2000 4000 6000

nyk yk 0 yk 85 %
Profitability of seed production

- Recommendation of the working group:
  - state subsidies cover 85 % of the costs caused by establishment and tending of young orchards
  - seed producer buys the land and takes care of 15 % of other costs

- Better cost-effectivity of state subsidies
- More established seed orchard area per year with the same amount of money
## Costs of seed production plan

<table>
<thead>
<tr>
<th>Year</th>
<th>Total 1 000 €</th>
<th>85 % (Public funding)</th>
</tr>
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<tbody>
<tr>
<td>2006</td>
<td>991</td>
<td>842</td>
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<tr>
<td>2007</td>
<td>1 061</td>
<td>902</td>
</tr>
<tr>
<td>2008</td>
<td>1 375</td>
<td>1 169</td>
</tr>
<tr>
<td>2009</td>
<td>1 250</td>
<td>1 063</td>
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<tr>
<td>2010</td>
<td>822</td>
<td>699</td>
</tr>
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</table>
Other recommendations by the working group

- Decentralized seed production strategy (several independent producers) the best option
- New producers to seed production
- Equality of seed buyers need to be ensured in seed trade
  - Terms of state subsidies
  - Control and enforcement of terms
  - Rules for seed trade
Other recommendations by the working group

• Research topics:
  • Genetic quality of basic material
  • Pollination from natural forests
  • Biotechnological applications
  • Pest and disease problems (spruce seed!)
  • Seed testing, handling procedures
  • Development of collection of seed from forests (seed sources)
What next?

- 2005, spring: Preparation of public funding for seed production plan
- 2005, autumn: Call for seed orchard plans, aim to find new (reliable, competent) producers
- 2006- : execution of the master plan