# *Starting seed orchards of other conifer species.*

# *Why?*

## *Utilization perspectives for orchards start-ups to obtain highly valuable wood (larch, Douglas fir)*

Riga 2013-04-05
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Enough or important to change to prepared for …..?? What?

Most usual tree species

| % of m³ | Pine | Spruce | Birch | Others | Sum |
|---|---|---|---|---|---|
| Sweden | 39 | 41 | 13 | 7 | 100 |
| Finland | 50 | 30 | 17 | 3 | 100 |
| | | | | | |
| Estonia | 34 | 16 | 31 | 19 | 100 |
| Latvia | 36 | 16 | 24 | 24 | 100 |
| Lithuania | 37 | 21 | 17 | 26 | 100 |

Other , not so common species

| % of m³ | ? | Lärk | Con-torta | Oak | Beech | Aspen | Black alder | Grey alder | Others | Sum others |
|---|---|---|---|---|---|---|---|---|---|---|
| Sweden | | 0,0 | 1,0 | 1,3 | 0,5 | 1,6 | 1,4 | | 1,0 | 6,8 |
| Finland | | | 0,05 | | | 1,5 | 0,3 | 0,9 | 0,6 | 3,4 |
| | | | | | | | | | | |
| Estonia | | | | | | 5 | 3 | 9 | 2 | 19 |
| Latvia | | | | 2,0 | | 9,0 | 5 | 7,0 | 1,0 | 24,0 |
| Lithuania | | | | 2,8 | | 6,3 | 8,3 | 4,3 | 4,0 | 25,7 |

## Threat pictures:

**Fungus** **Insects** **Wild animals**

**Climate change**

**Storms** **Rain-and snowfalls** **Flooding**
**Frost** **Drought**

**Other market and more Restrictions**

## Examples of “Threat pictures”

**Fungus**
**Fomes annosus** mostly in south and middle of Sweden

**Gremmeniella,** big damage in middle of 1960 in south and 2000-2002 in middle of Sweden after **cold and wet summers**

Some **new Fungus** are already found - one of them **after warm and moist summers**

## Insects

### Nun moth in Kolmården

**Spruce bark beetle (**Ips typographus) after big storms

9 milj m³ wood destroyed in 50 years

**Mountain pine beetles** 2009 9 milj m³

600 milj m³ wood destroyed in 50 years

**Wild damage** of spec pine in south Sweden are the reason to near double up spruce planting!!!

**1898-1902**

**The nun moth ( Lymantria monacha L) destroyed a large areas of forest,**

**3 000 ha, north Norrköping Lat 58 40**

**“The trees became red and large forest areas were bare like after a fire.**

**But after some years the caterpillars were stricken with illness-“**

## Climate

**3 big storms 1969** in south Sweden
The first in September - also a lot of **broad leafed trees fell**

**The big storm Gudrun January 2005** 75 milj $m^3$

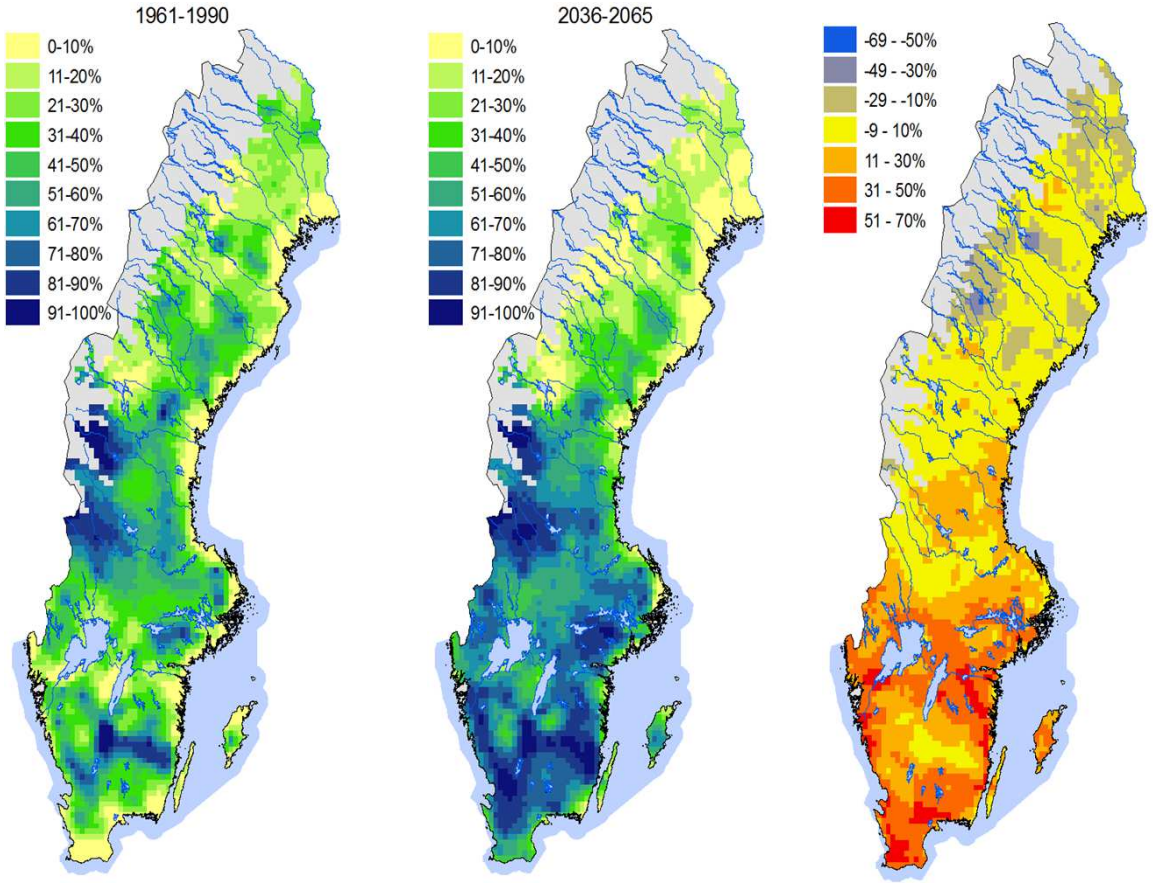
**Rainfall and big flooding ½ years before Gudrun in the same areas (Damaged roots of the spruces??)**

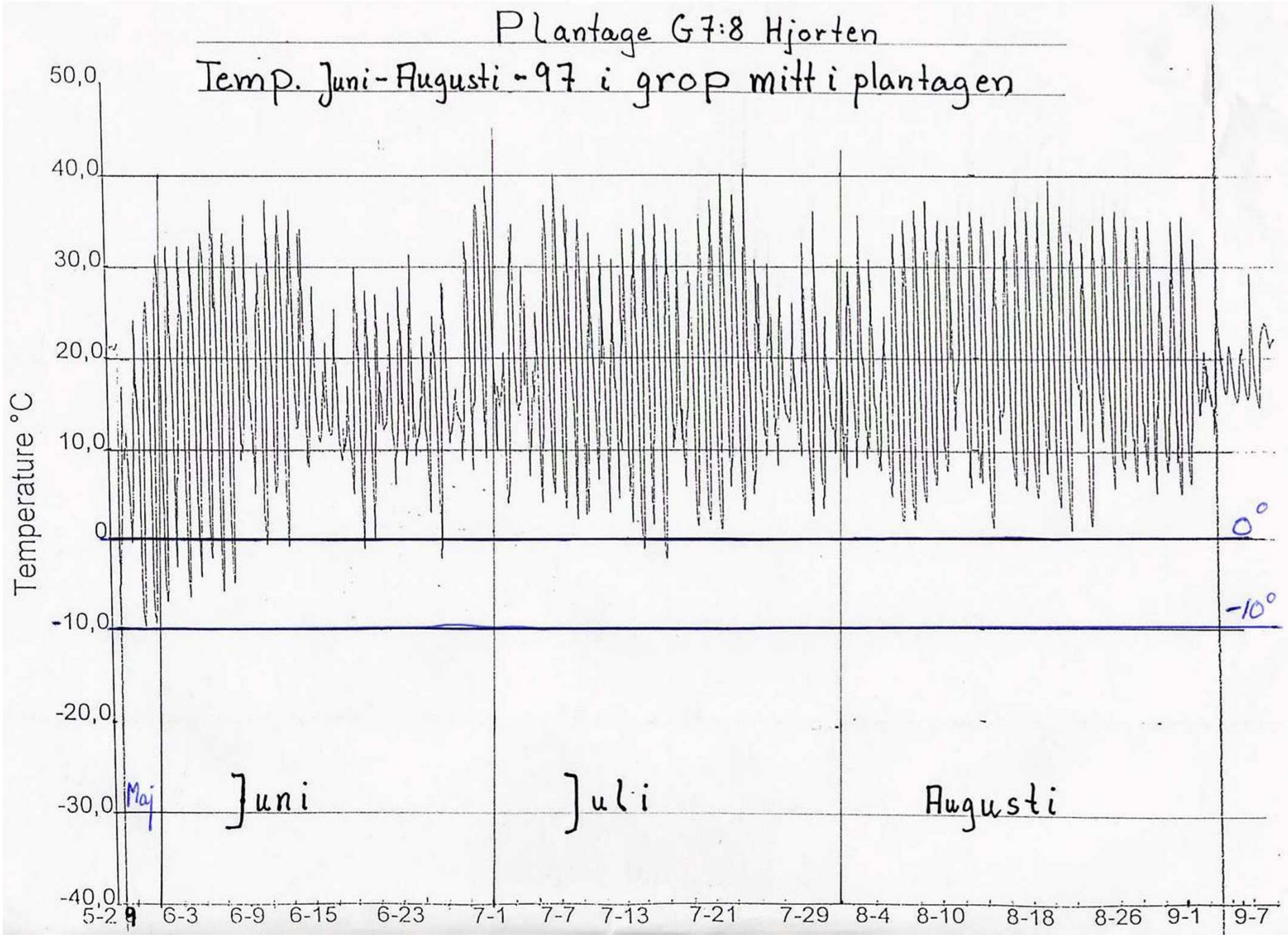
**More frost in the future** (Maps and a measure)

**8-9 January 2005 Before and after the storm “Gudrun”**
**75 milj m³ dropped down**

**Accumulated risk for frost damage of bare-root plants. Norway spruce. Provenance Middle-Sweden**

**Risk difference between the periods 1961-1990 and 2036-2065**

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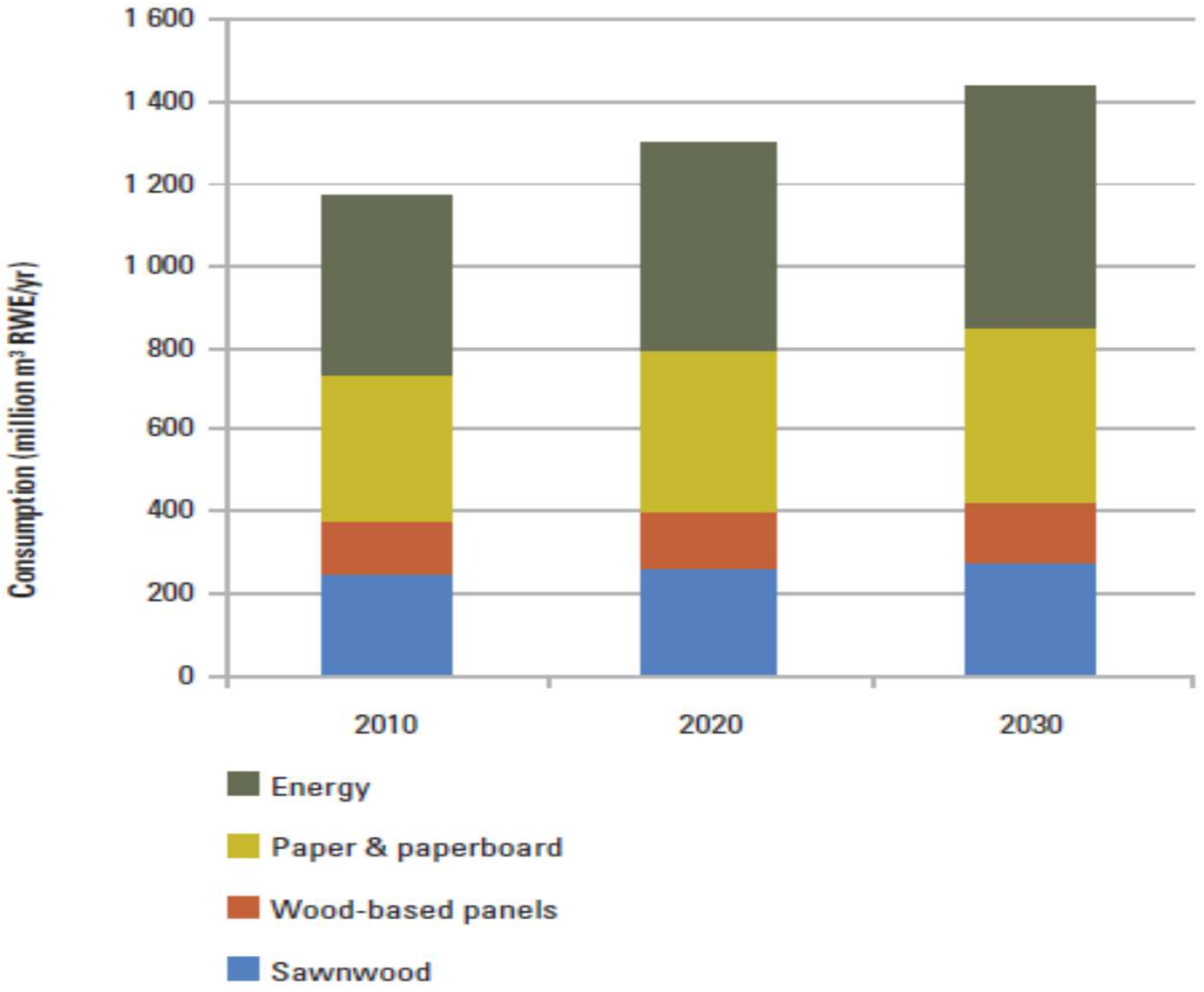
# The development of the consumption of forest products according to one of UNESCO:s scenario for the future



**With regard to these threats there are many reasons to plan for changing the tree species division!**

**What to think about, when you have to use the right choice?**

- **For the site**: Right tree species and provenances and preferably with different species in stands near each other.
- **Product demands –** today and expected
- **Environment demands**
- **Laws and Certifications**

## Examples of two suitable tree species:

**Hybrid larch (Larix eurolepis**) and

**Douglasspruce** (Pseudotsuga menziesii)

- **Description of why and choice of provenance**
- **How to start up more breeding and orchards**

## Characteristics and claim

| | **Soil/ fruitfulness** | | | **Dampness/moisture** | | |
|---|---|---|---|---|---|---|
| | Poor | Middle | Rich | Dry | Middle | High |
| Pine | ---------- | | | ---------- | | |
| Spruce | | ---------- | | | ---------- | |
| **Hybridlarch** | | ---------- | | | ---------- | +”moving water” |
| **Douglas** | | ---------- | | | ---------- | (not in clay/peat) |

| | **Frost (young stands)** | | | **Storm** | | **Light** |
|---|---|---|---|---|---|---|
| | Vår | Höst | | Young | Older stands | |
| Pine | (x) | (x) | | x | (x) | xxx |
| Spruce | xxxx | x | | xx | xxxx | x |
| **Hybrid larch** | xx | xxx | ***Provenance!!*** | xx | (x) | xxx |
| **Douglas** | xxx | x | ***Provenance!!*** | xx | (x) | x |

**Continuation: Characteristics and claim**

Risk of Hylobius ab. like for pine and spruce (both HL and D)
Risk of Root rot in young stands (both HL and D)
Wild damages depends on the supply of other food (both HL and D)
**Hybride larch** grows very quickly. Rotation 35-50 years. Growing well on arable ground. Good sheltertree for oak and beech and growing well e.g together with Black alder.
High wood density, more heartwood. Can turn a little.
+++ Construction timber. Floor, outdoor -- Pulpwood
**Douglas fir** producing much more than spruce on the ”middle-grounds”. Good together with spruce.
Strong timber. High wood density, more heartwood.
+++ Construction timber. Floor, outdoor. Pulpwood

**Choice of provenance in this case:**

**<u>Hybridlarch:</u> Orchard Trolleholm FP -743** in south of Sweden
Second generation. Look at the picture!
9 years after planting – Mean diam 8,9 cm – Mean height 8,3 m

**<u>Douglas fir:</u>** Second generation stands in Finland near Lat 61 planted in a site with “ground cold” nights and open for winds and sunshine.
1:st generation stand in Mustila provenance Quesnel BC Alt>650m.
Noticed: The provenance has been “winter hard in time” and no spring frost damage.

**Hybrid larch  from orchard Trolleholm FP-743, 9 years after planting**

**Douglas fir from British Columbia**

Douglas floor