

European larch – a potential exotic for northern Sweden?

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Background

- European larch was the first exotic larch species planted in Sweden, it was in the 1760's
- Serious attacks of larch cancer in the 1940's were recorded in southern Sweden
- Hybrid larch (resistant to larch cancer) replaced European larch
- Old provenance trials from 1960's reveal high growth potential in central and northern Sweden

Material and methods

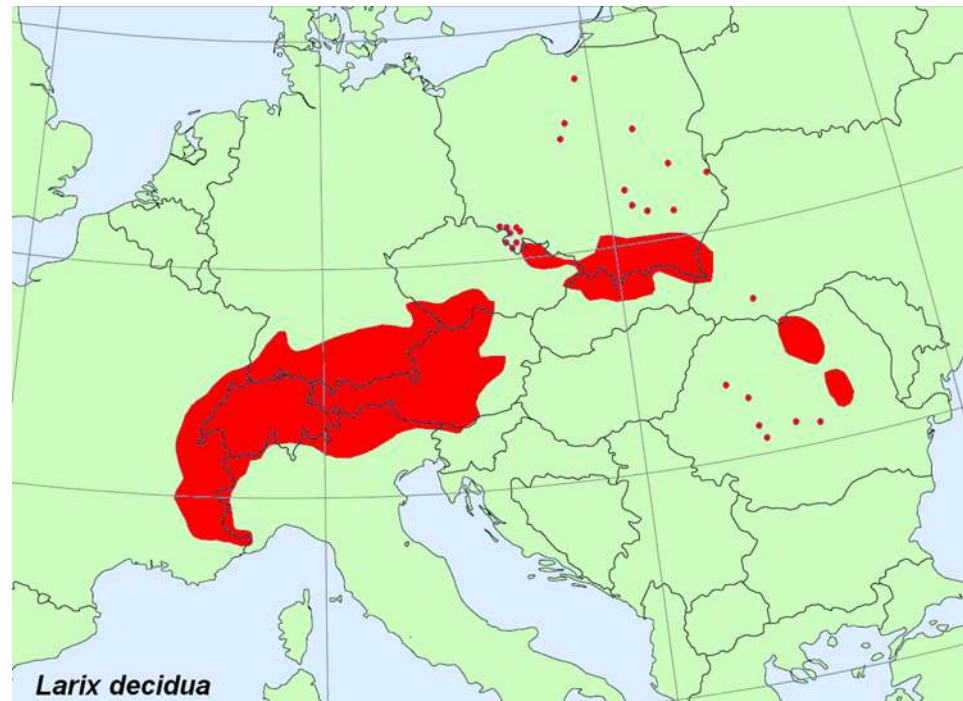
- The Milan Simak serie of European larch in Sweden established 1962-1968
- 8 sites from
 - Latitude $55^{\circ} 35'$ – $64^{\circ} 46'$
 - Altitude 70 – 470 m
 - T-sum 635-1520 d.d.

Results from three of the northern sites will be presented

Natural distribution of *L. decidua*

- 76 provenances tested in the Simak serie

W Alps
C Alps
E Alps
Sudeten
Tatra
Poland
Rumania

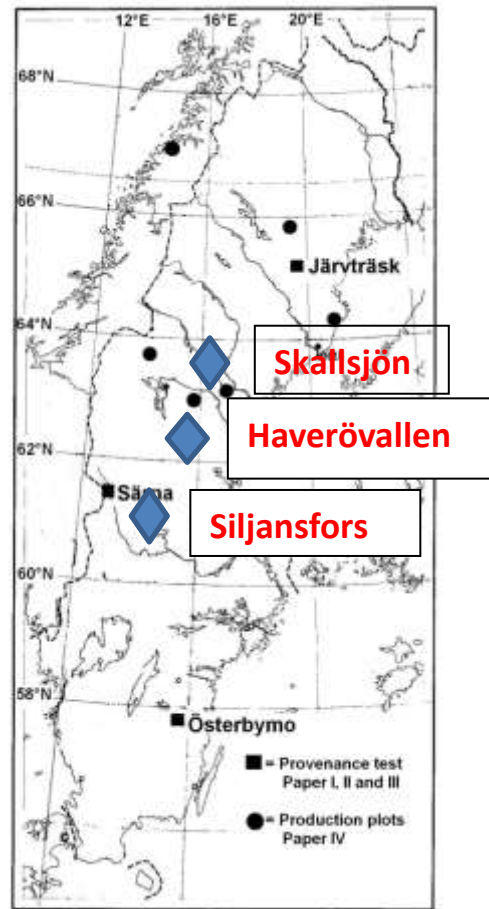


Source: EUFORGEN 2009

Sites

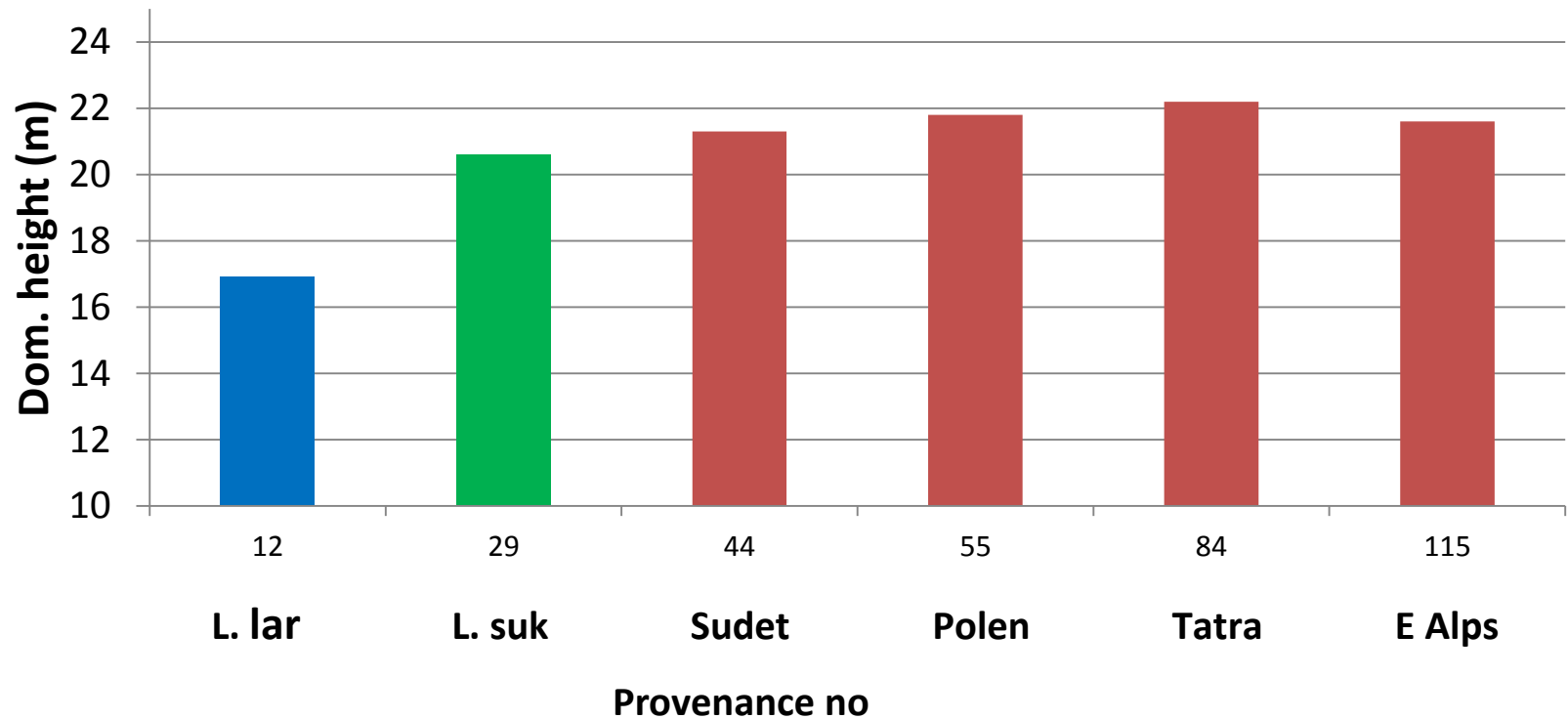
• Site,	Lat N	Alt. m	Pl year	T-sum	N blocks
• Skallsjön	63°29	470	1967	705 d.d	6
• HaverövalLEN	62°30	430	1961	800 d.d	3
• Siljansfors	60°55	400	1968	930 d.d	6

Location of the sites



Skallsjön, 63°29' N, T-sum 705 d.d. Dominant height 44 years after planting

1886 Skallsjön



**European larch has a longer growing period in the autumn compared to Russian larch (*L. sukaczewii*).
Photos taken 28 sept 2011.**

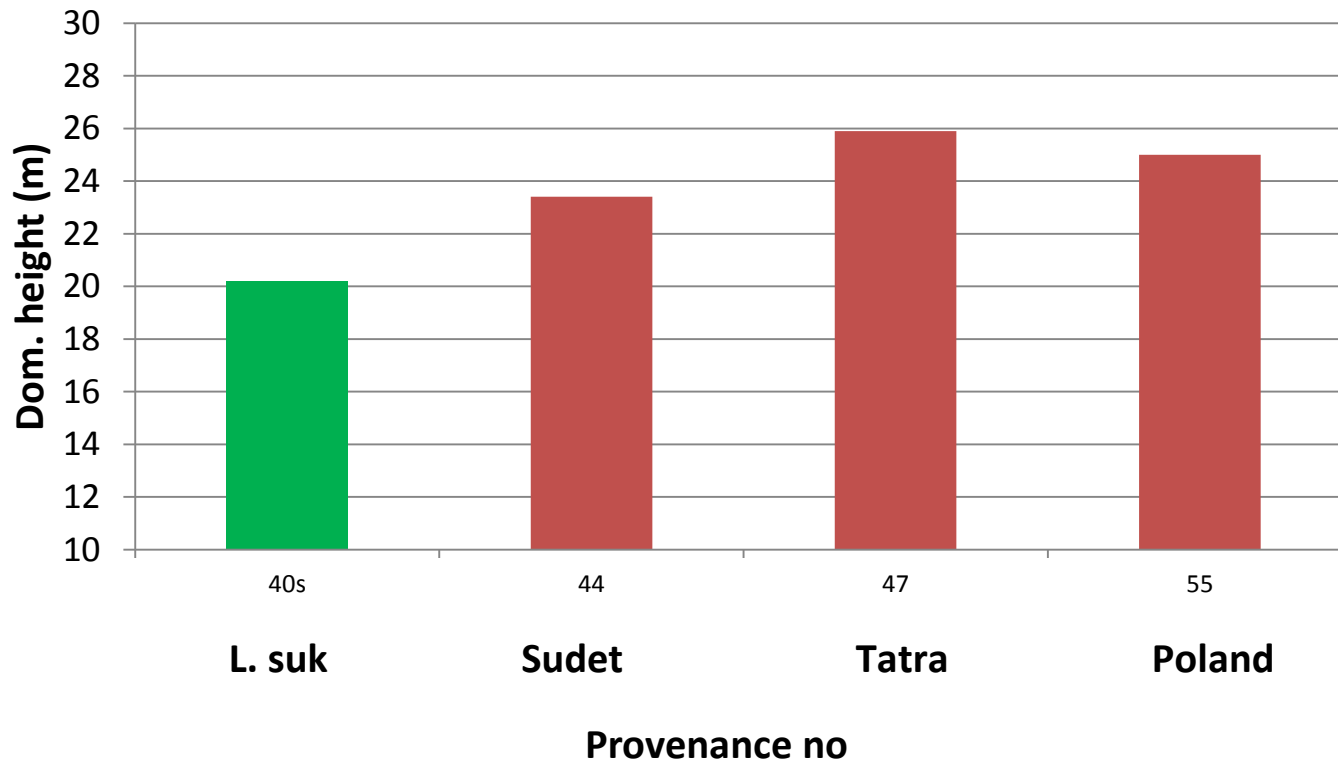


Main findings from the Skallsjön site

- Russian larch (*L. sukaczewii*) had faster juvenile growth than European larch (Simak 1979).
- European larch suffered more frost damage in seedling stage (Simak 1979).
- *Adelges* attacks mainly hit *L. sukaczewii* (Simak 1979).
- After 21 years, the best European larch provenances surpassed Russian larch in height growth (Martinsson 1992).
- The stem straightness was better in Russian larch than in European larch (Karlman 1998)
- 44 years after planting the mean height was 2 m higher for the best European larch provenances compared to Russian larch.

Haverövallen (62° 30' N, T-sum 800 d.d), Dom. height 50 yrs after planting

1865 Haverövallen



Main findings from the HaverövalLEN site

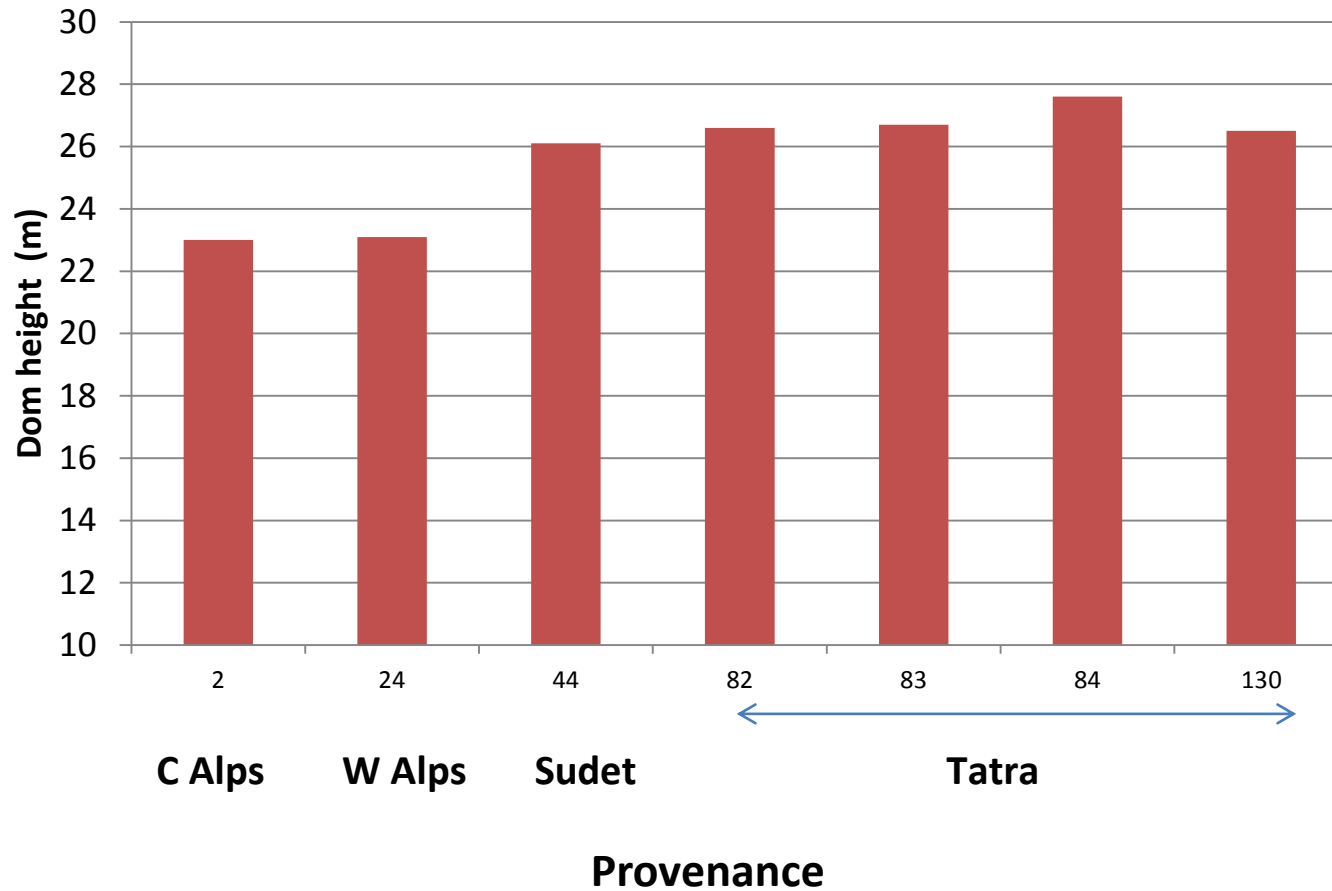
- The dominant height of the best European larch provenance was almost 6 m higher than in Russian larch (a Swedish provenance from Bispgården).
- The best provenance originated from the Tatra Mts, 1100 m altitude. It had better height growth than provenances from Sudeten (650 m alt.) and Poland (360 m alt.).
- European larch can perform well also on a quite poor site (*Empetrum, vaccinium* dominated site)

Provenance Cierny
Vah from the Tatra
mountains (SVK) has a
dom. height of 26 m at
site Haverövalen

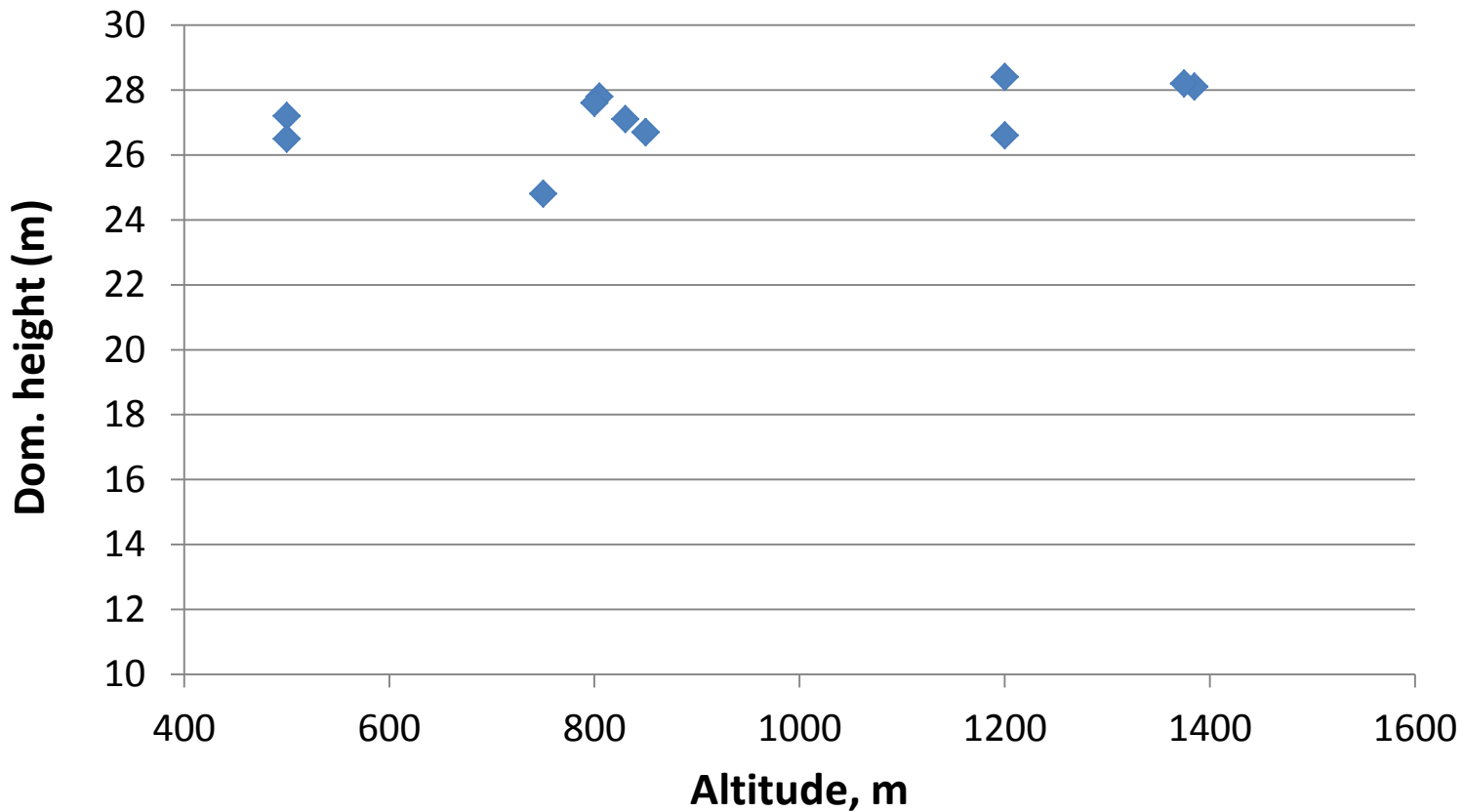
Site index: L 36



Siljansfors. Dominant height 43 yrs after planting



Tatra provenances. Dom height vs altitude of seed source



Main findings from the Siljansfors site

- Larch from the Tatras grew best. Prov 84 Ipoltica gives site index L 39
- Dom. Height was 4-5 m taller in these compared to larch from the central and western Alps.
- Within the Tatra provenances there was no correlation between height growth and altitude of seed source

Stem straightness

- Stem straightness was assessed in a 5 degree scale where 1 is a straight stem and 5 is a very crooked stem.
- **Prov 44 Krnov**

	T-sum	St. str.
– Siljansfors	930	2.15
– Haverövalen	800	2.68
– Skallsjön	705	4.07

Stem straightness

Crooked stems
are more
common on
the most
northern site.



Summary

- European larch show high growth potential when tested on three sites between Lat 61-63 N in central and northern Sweden
- Autumn frost damage and worse stem straightness has been recorded on the most northern of these sites.
- Provenances from the Tatra Mts and the Sudeten Mts show best height growth