

Picea sitchensis (Bong. Carr.) Sitka spruce

Seed orchard C.E. Flensburg FP.625



Purpose

Production of superior seeds compared to ordinarily used seeds in Denmark in terms of survival, stem form and growth energy.

Basic material

The basic material of the seed orchard is 32 plus trees of presumed Washington origin from selected seed stands in Frijsenborg, Meilgaard, Sostrup, Lindenberg, Silkeborg and Linå Vesterskov forest districts.

Selection criteria

Stem form, growth energy, branch quality and health.

Yield table for Sitka spruce

Calculated gain from using FP.625 compared to ordinarily used seed material in Denmark. The standard is an excerpt from H.A. Henriksen, 1958, at a rotation age of 50 years for Iv0-T. See the table on the next page:

FACTS

Composition

Year of propagation: 1965-68

Year of establishment: 1969-72

Families represented at establishment: 32

Original spacing: 1.5 x1.4 m

Genetic thinning: Removed 7 families in 1998

Isolation: Approx. 500 m to closest Sitka spruce

Country: Denmark

Reference number: FP.625

Category: Tested

Identification

Species: Picea sitchensis (botanical name) Sitka spruce (popular name)

Ownership: Det danske Hedeselskab

Supervisor: HedeDanmark a/s, Forest Seed

Location: C.E. Flensburg Plantage dpt.103

Latitude: 56°38'N

Longitude: 09°25'E

M.a.s.l.: 35 m

Area: 5.41 ha

Site class 1-4	Iv0-T (m3/ha) ¹	+18% (m3/ha) ²	+24% (m3/ha) ³
Site class	1113	1313	1380
Site class	806	951	999
Site class	535	631	663
Site class	334	394	414

1. Standard excerpt from H.A. Henriksen, 1958. 2. 18% appear with the percentage increase in height and diameter, calculated at a volume gain over rotation based on the yield table. 3. 24% originate from a traditional quantitative calculation model for the trials in question.

Design

The seed orchard is a seedling seed orchard consisting of progenies from open pollination of the 32 selected plus trees. The design is a randomised block design with 100 blocks. In each block all families are represented in plots with 8 trees. The original plant spacing was 1.5 x 1.4 m. After phenotypic selection, the seven poorest trees according to height and stem form were removed from each plot at the ages of 16 and 18.

Based on four progeny trials at four different locations, genetic thinning was carried out in 1998, removing the seven poorest families completely. The 25 best families are now left with only the best tree in each plot. There is, however, some deviation from this owing to heart-rot fungus and windfalls.

Genetic gain

After the genetic thinning according to the results of the progeny trials, the genetic gain for volume, achieved 18 years after establishment, was calculated at +30%, corresponding to +24% over a rotation age (50 years). Other genetic gains: Stem form +4.7%, Survival -1%, Bifurcation -2.5%, Leader brake -7%, Wood density 0% (very positive compared to the considerable gain in volume).

The genetic gains are deviation in percent from the standard Frijsenborg, Haurum F.235c (DK), origin Washington, USA, which was part of the progeny trials.

Recommended growing areas

Wherever planting of Sitka spruce is recommended.

GENETICAL GAIN %

■ C.E. Flensburg FP.625 ■ Frijsenborg, Haurum F235c

