

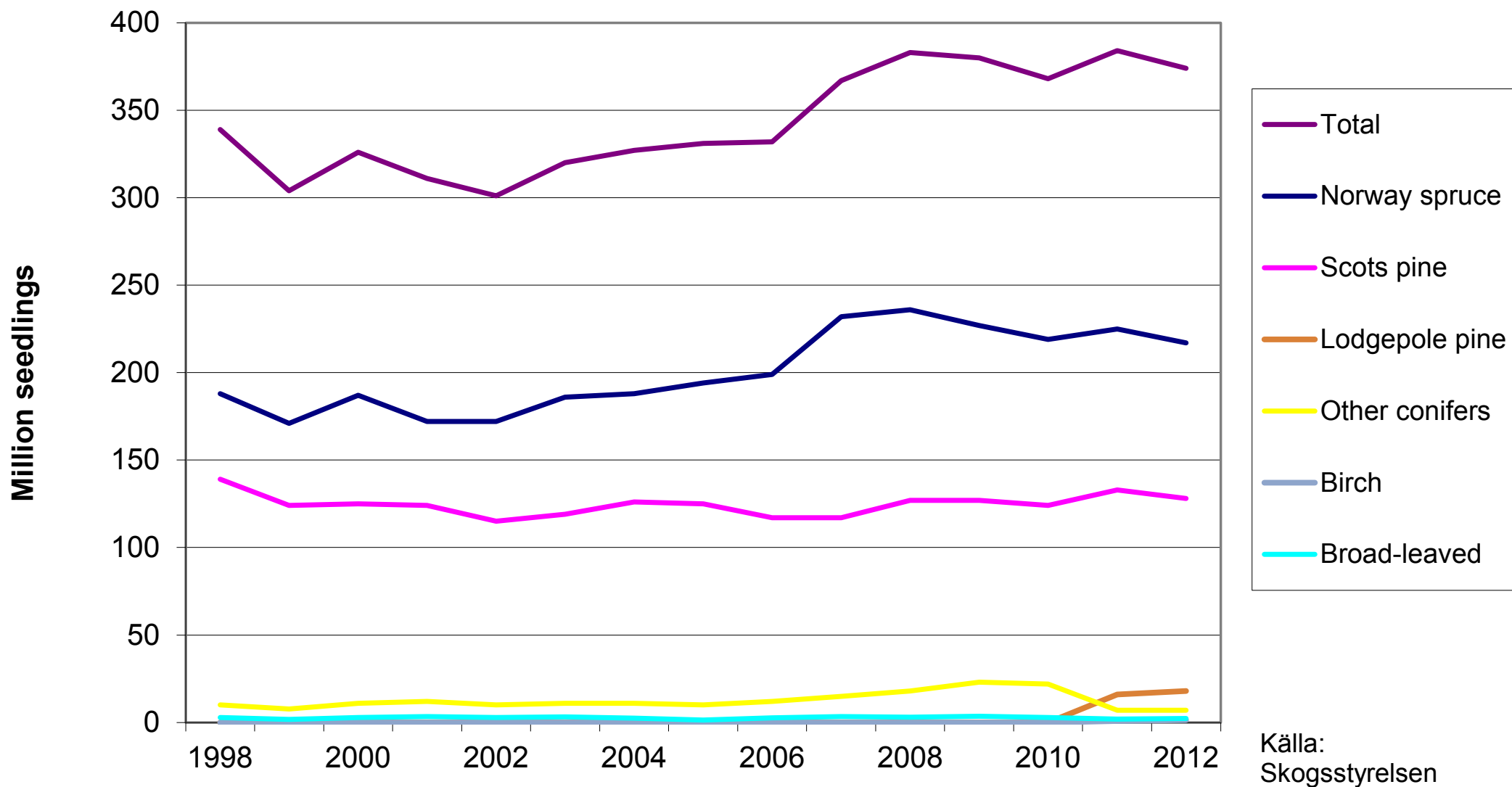
Basic principles of developing forest tree seed orchards in Sweden

Orchards turnover for obtaining seeds of higher genetic value

Curt Almqvist

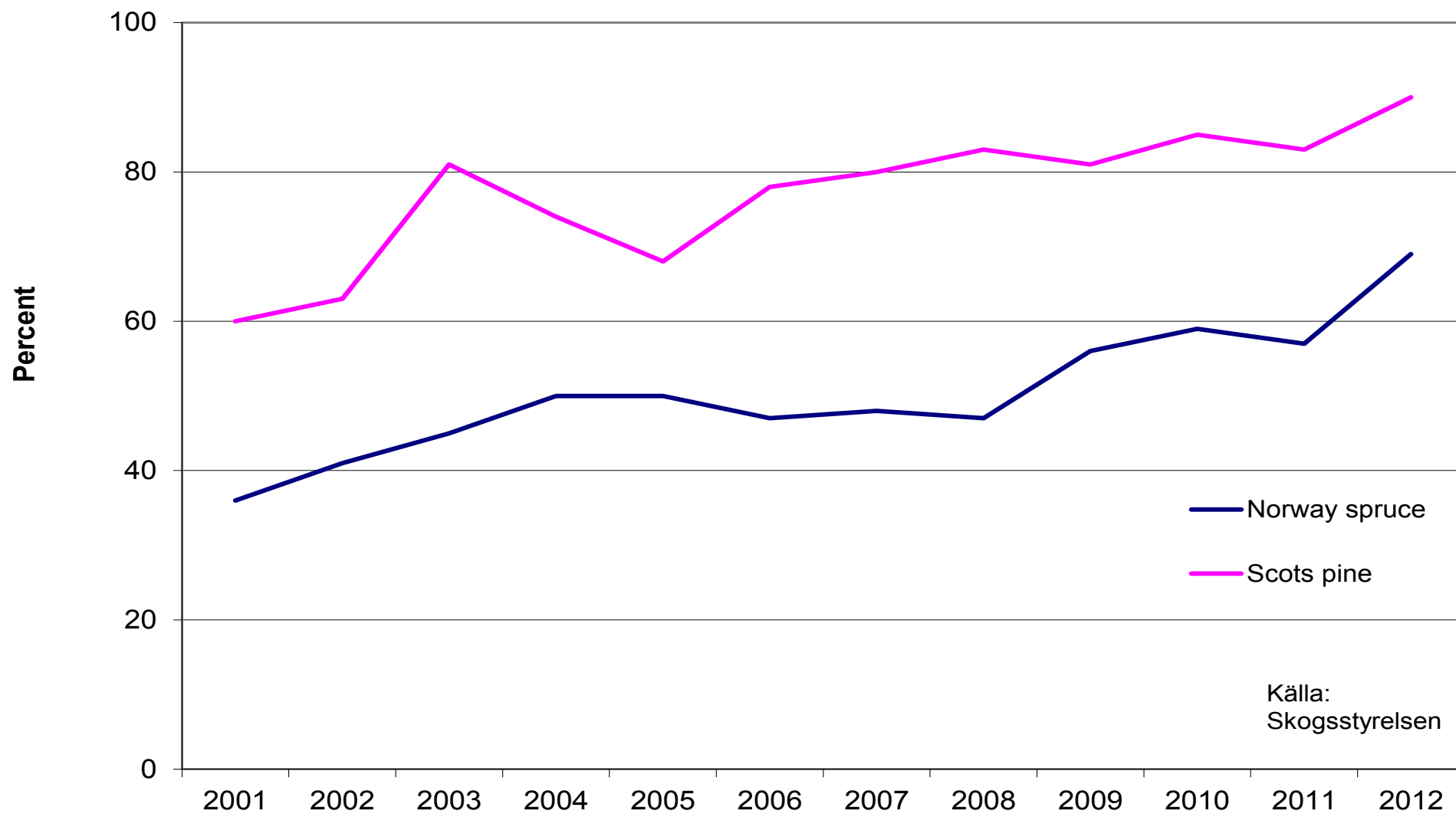


Seedlings for use 1998 - 2012

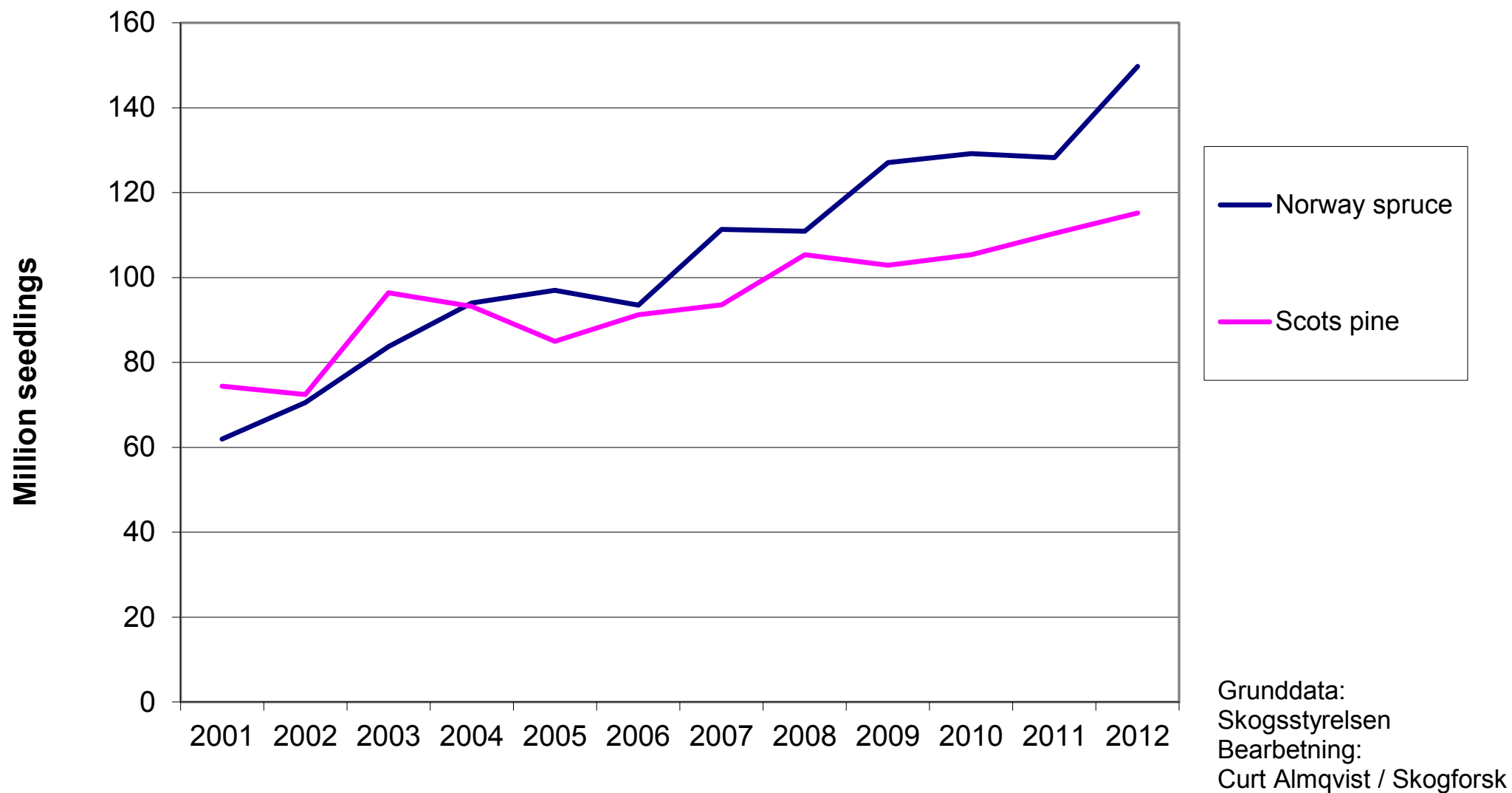




Percent seed orchard seed 2001 - 2012



Seedlings from Swedish seed orchard seed 2001 - 2012

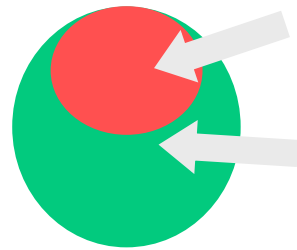


Seed orchards in Sweden

- First batch
 - First S.O. established 1949. the rest before 1975.
 - 575 ha Scots pine 235 ha Norway spruce
 - $\Delta G \sim 10\%$
- Second batch
 - Established 1980 – 1999
 - 350 ha Scots pine 230 ha Norway spruce
 - $\Delta G \sim 10 - 15\%$
- Third batch
 - Are under establishment since 2003
 - 211 ha Scots pine 366 ha Norway spruce
 - $\Delta G \sim 25\%$

Long term breeding

Genetic
level



25 selected seed orchard trees

50 selected trees to the breeding population

**300-2000
untested
P-plus trees**

Test

**300-2000
tested
P-plus trees**

50

Test

**500-2000
tested F1**

50

Test

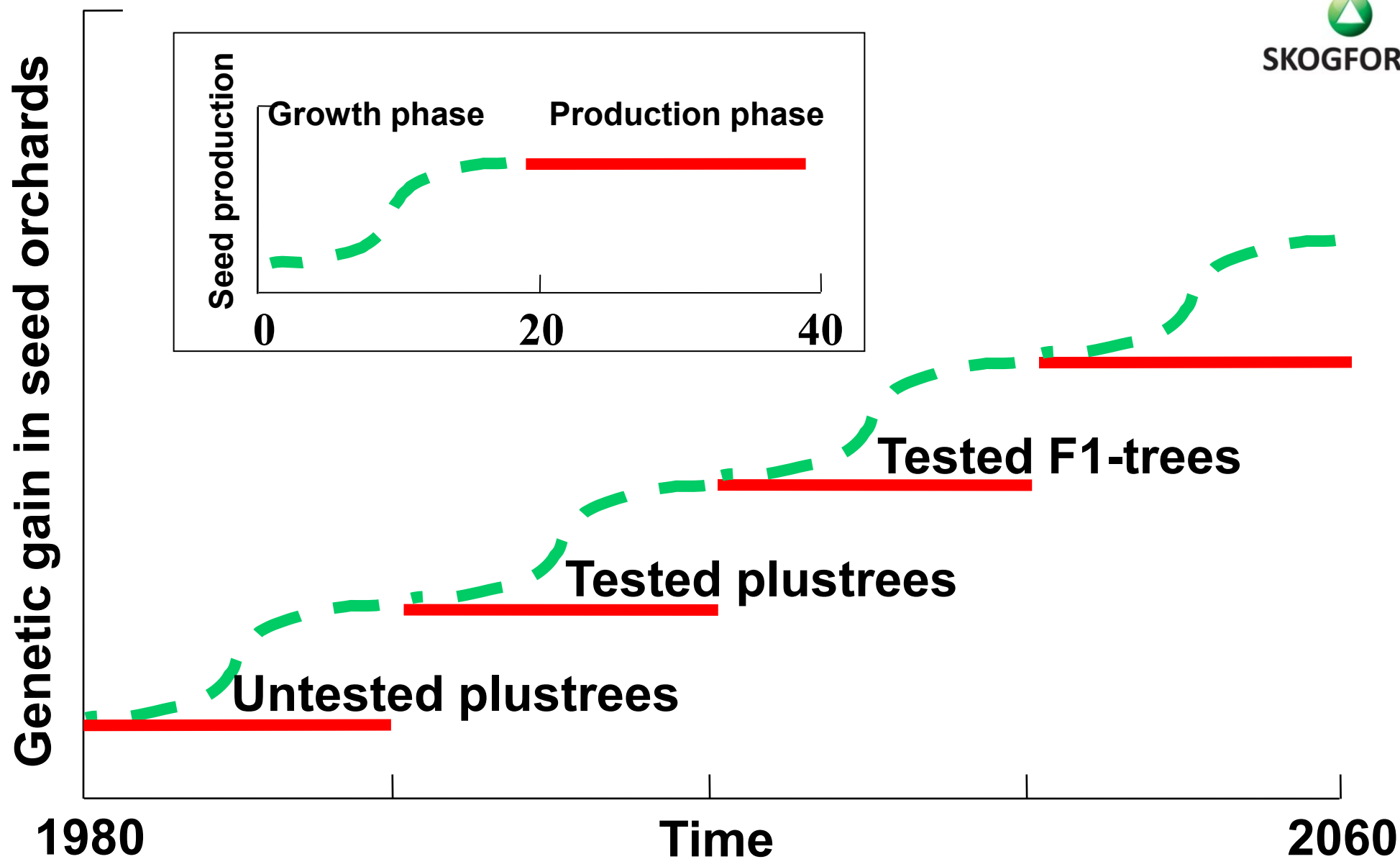
**500-2000
tested F2**

50

1980

Time

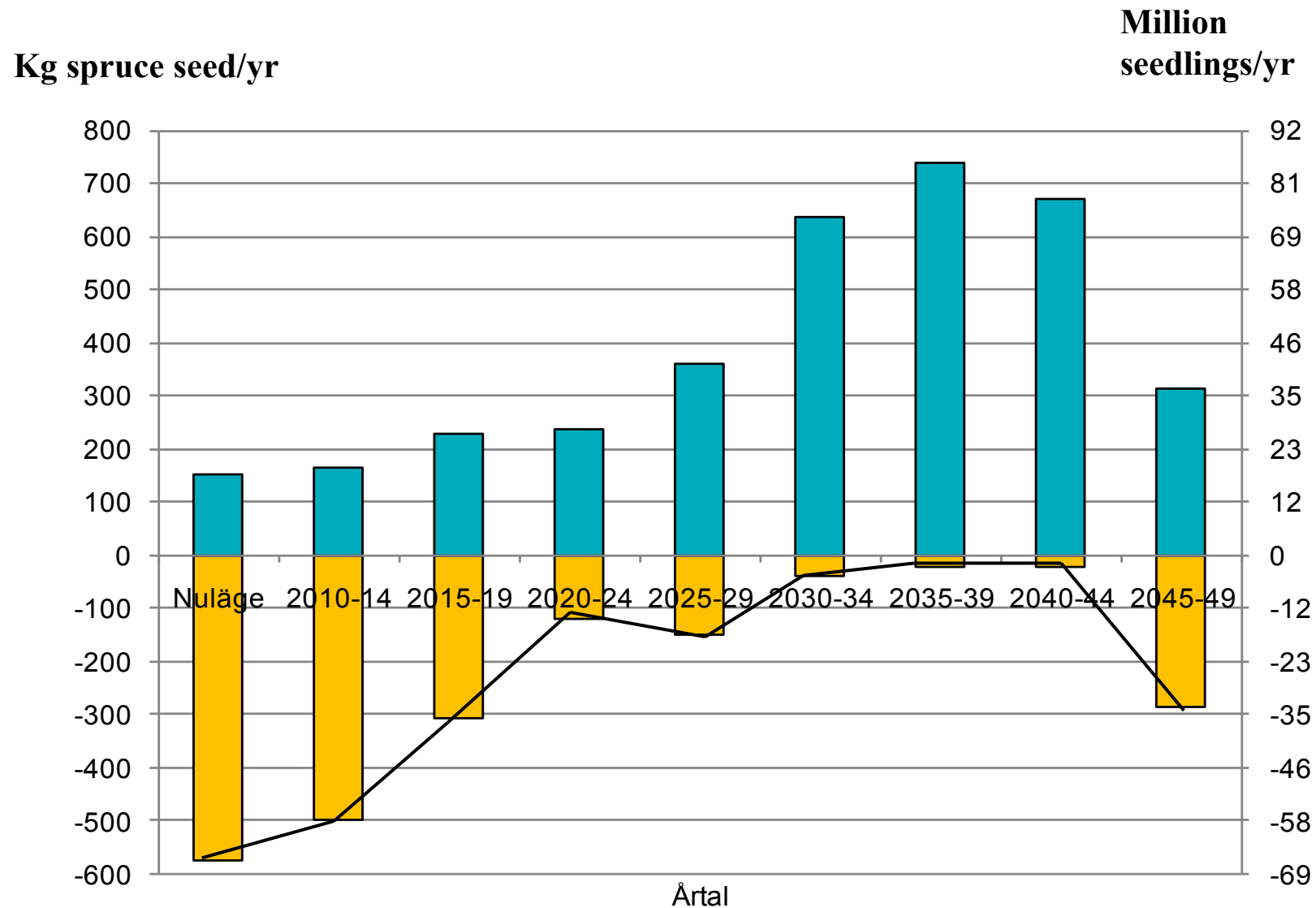
2040



Features of the new seed orchard programme

- National, covers whole Sweden
- No state financing – financed by the land owners
- Will secure a full supply of improved seed
- Hedge orchards of pine, 7×3.5 m
- Topped orchards of spruce, $7 \times 4.5 - 7$ m
- Minimum size 10 ha
- Choice of locality very important
- Reuse of old seed orchard localities if possible

Norway spruce seed supply



Measures to increase S.O. production

Intensive management



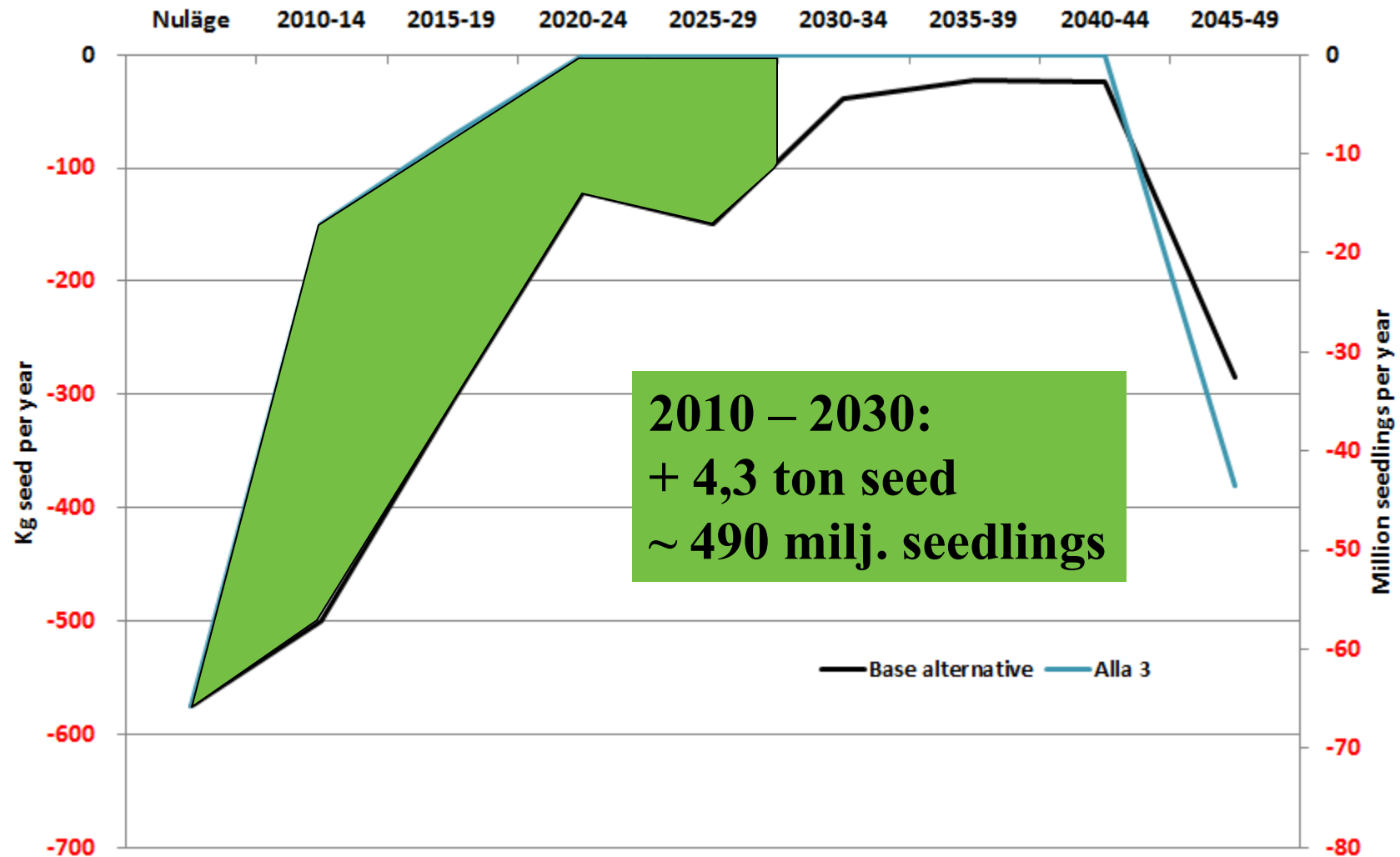
Flower stimulation



Control of insects



Norway spruce seed supply



Take home message

- Synchronize your S.O. establishment with the progress in the breeding program
- The use of
 - Intensive S.O. management
 - Flower stimulation
 - Insect control

Can substantially increase the S.O. production

