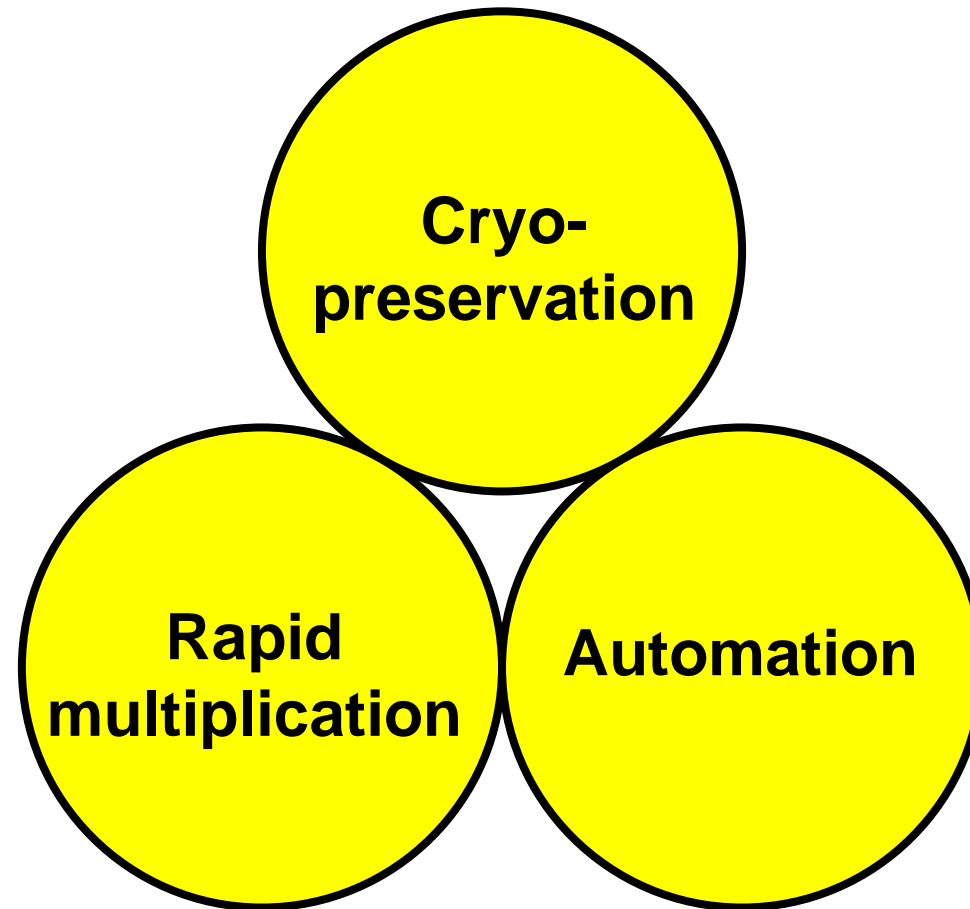


Somatic embryogenesis

Useful tool or extravagance?

By: Karl Anders Hogberg



Cryopreservation



Rapid multiplication

Proliferation rate: **2** every second week

Embryo harvest: **15** / g tissue

1 000 000 plants – **51** weeks after initiation start

Proliferation rate: **3** every second week

Embryo harvest: **30** / g tissue

1 000 000 plants – **33** weeks after initiation start

Automation

- ◆ **Uniform** size and shape of formed somatic embryos
- ◆ Beneficial for **large-scale** plant production
- ◆ **Development** underway, no system ready at present

Question marks

- ◆ Genetic changes
- ◆ Genetic selection
- ◆ C effects
- ◆ c effects

Genetic changes

- ◆ **Low somaclonal variation** observed in white spruce clones, 0.2% (Isabel et al. 1996)
- ◆ **High clonal correlation** in early growth after three and four years **cryopreservation**, respectively (Park et al. 1998; white spruce)

Question marks

- ◆ Genetic changes
- ◆ *Genetic selection*
- ◆ C effects
- ◆ c effects

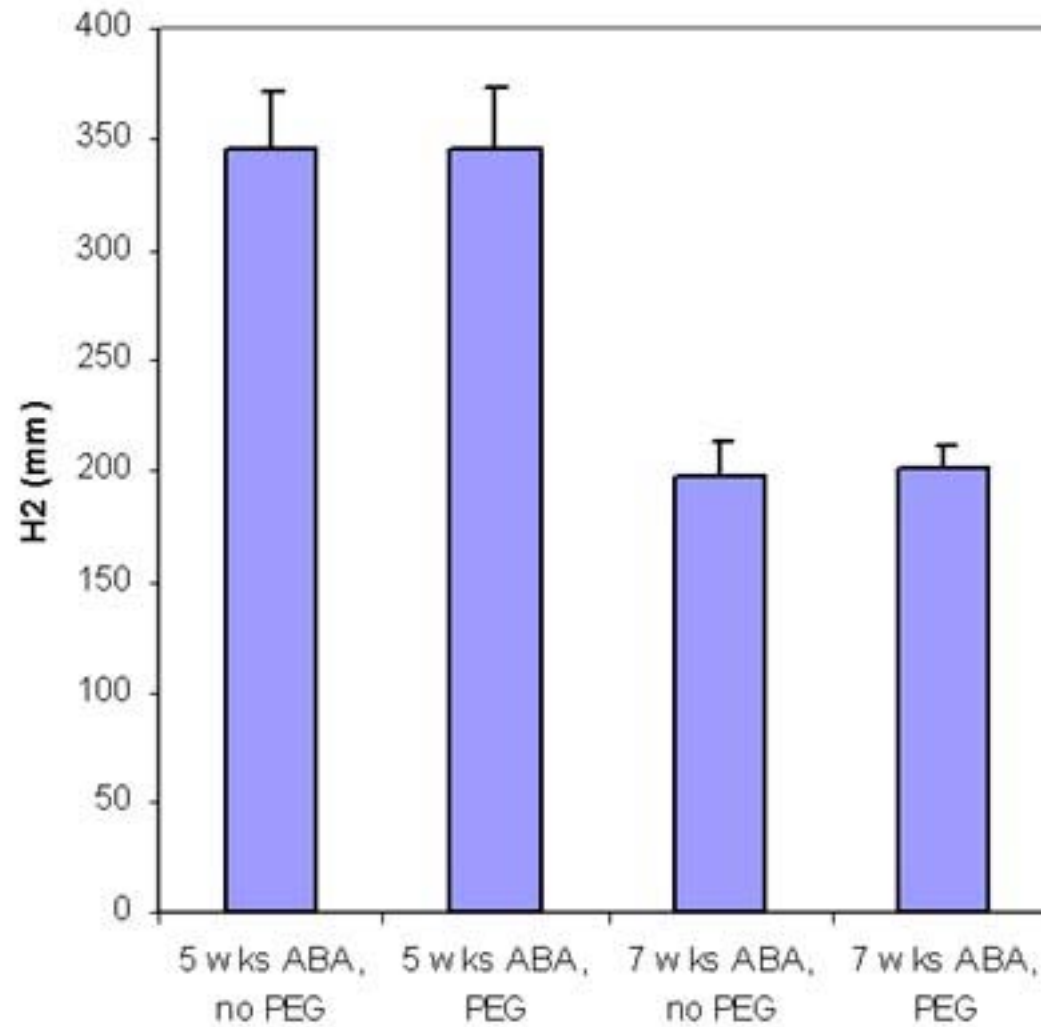
Genetic selection

- ◆ **Correlations between propagation ability and breeding traits not reported**
- ◆ **Unfavourable selection not likely (very low propagation rates and strongly negative genetic correlations)**

Question marks

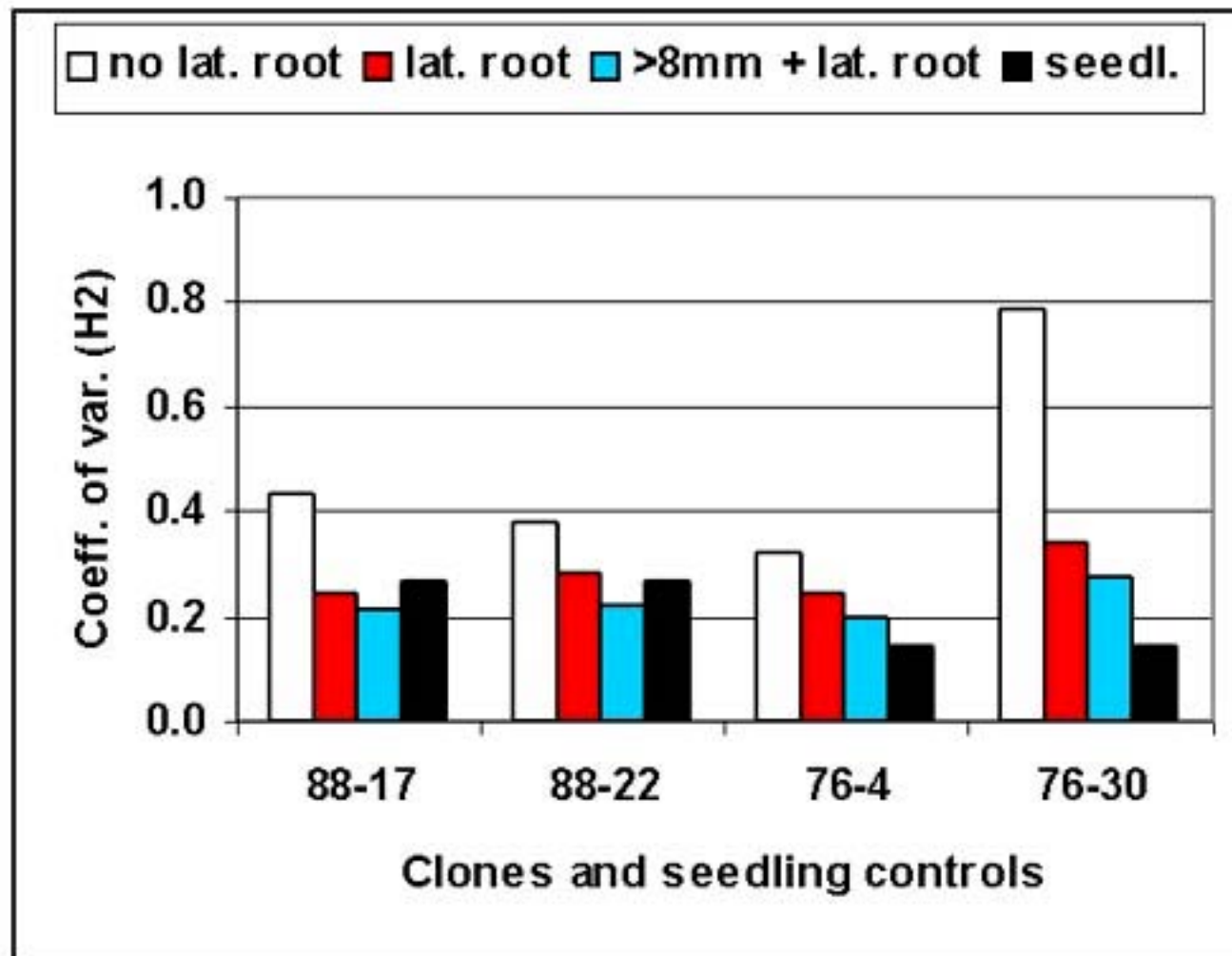
- ◆ Genetic changes
- ◆ Genetic selection
- ◆ *C effects*
- ◆ c effects

Effect of ABA treatment



Question marks

- ◆ Genetic changes
- ◆ Genetic selection
- ◆ C effects
- ◆ *c effects*



The price

- ◆ **3-5 times** higher than for seedlings
- ◆ Automation of **later steps** more important than bioreactors for cost reduction
- ◆ Plant production **logistics** may be a problem
- ◆ **Juvenility maintenance** cost-effective

Time aspect

- ◆ **SE – exploitation three years after field test**
- ◆ **Cuttings – a few years longer, large stock plant areas**
- ◆ **Cutting propagation of SE stock plants –some additional years**

Tool or extravagance?

