



**Sachsenforst**



# Seed-transfer in Europe

## Summary

Partner N° 8



# Contents of the summary

- Workshop „Seed transfer in Europe – what do we know“, January 2008 in Pirna
- Questionnaire on „Seed transfer in Europe“

## Reports on seed transfer

- End of 15th century: First documentation of seed transfer (e.g. Riga pine from Baltic region to France)
- Since 19<sup>th</sup> century: Large amount of seeds and seedlings with unknown origin were transferred all across Europe

# Reports on seed transfer

- Examples:
  - › Since 1800, practical experience with Scots Pine and Norway Spruce seeds in Sweden
  - › 1828 Douglas Fir introduced to England and Scotland by David Douglas (Göhre 1958)
  - › Huge amounts of Norway Spruce seeds transferred from southern Germany and Austria to eastern Norway
  - › Since 1900, reforestation of Ireland mainly with FRM imported, due to economical reasons

## Reports on seed transfer

- 20th century: First well documented studies on the origin of seeds, on growth quality and survival of trees
- Up to middle/end of the 20th century: Increasing seed transfer
- Actual situation: Tendency of decreasing seed transfer
- Example France: In the 1990ies, import of Douglas-fir seeds up to 1,000 kg per year compared to 370 kg in 2004

## State of art related to seed transfer

- Especially latitude and altitude shifts can diminish survival and reduce stand productivity
- Success of transfer depends on local climate as example of Ireland shows: Good results with conifers from north west coast of USA and Canada
- Critical traits: Early flushing, cessation of growth in autumn
- In many cases, local populations showed usually superior growth compared to transferred ones

## Conclusions from the reports

- The adaptation to the different site conditions in the natural distribution area leads to genetic differences among populations
- The genetic differences lead to different characters, therefore it is necessary to define different provenances
- It is very important for all forest species used in reforestation to choose an adequate seed origin to be sure that those populations could be well adapted to the local conditions resulting in high survival and high growth

## Results of the working sessions

- One of the major problems in nearly each country is the lack of information concerning import, export and where about of FRM
- In several countries, there is no awareness on the importance of the choice of provenance
- For solving the problem, the forest owners have to be convinced to use specific well adapted plant material



## Results of the working sessions

- Taking climate change into account, tree breeders task will be to establish public awareness (especially forest owners, private nursery companies, other public groups) for this subject
- Breeding results have to be transformed into an appropriate way, which will be understandable for private forest owners

## Results of the working sessions

- Tree breeders should concentrate on the following questions:
  - › Is local material the best choice in every case?
  - › How should climate change be considered ?
  - › Should we concentrate on new species ?
  - › How can we manage a useful documentation of seed transfer?

# Results of the questionnaire

## Preface

- According to the EU-regulations on the Marketing of Forest Reproductive Material there is no import or export within the EU there is only transfer
- Import and export is meant for the transfer of FRM from Non-EU-members to EU and vice versa
- In the following, the terms are used for both processes in order to classify the streams of FRM

## Results of the questionnaire

- Total kg seeds (broadleaves plus conifers) transferred per year across Europe (mean of last 10 years)
- **Export:** 94,444.49 kg                      **Import:** 157,662.03 kg



- **Total transfer:** 252,106.52 kg seeds per year
- **Difference:** 63,217.54 kg

## Results of the questionnaire

- Mill. seedlings (broadleaves plus conifers) transferred per year across Europe (mean of last 10 years)
- **Export:** 46,867 Mill.                      **Import:** 107,768 Mill.



- **Total transfer: 154,635 Mill. seedlings per year**
- **Difference: 60,901 Mill.**

## Main tree species transferred (inside/outside the respective country)

Species	Imported	Exported
<i>Abies nordmanniana</i>	X	X
<i>Larix decidua</i>	X	X
<i>Picea abies</i>	X	X
<i>Pseudotsuga menziesii</i>	X	X
<i>Fagus sylvatica</i>	X	X
<i>Prunus avium</i>	X	X
<i>Quercus robur</i>	X	X

## Main tree species transferred (inside/outside the respective country)

Species	Imported	Exported
<i>Abies procera</i>		X
<i>Pinus sylvestris</i>		X
<i>Alnus glutinosa</i>		X
<i>Betula pendula</i>		X
<i>Castanea sativa</i>		X
<i>Quercus rubra</i>		X

## Main tree species transferred (inside/outside the respective country)

Species	Imported	Exported
<i>Picea sitchensis</i>	X	
<i>Pinus pinaster</i>	X	
<i>Fraxinus excelsior</i>	X	
<i>Tilia cordata</i>	X	
<i>Quercus petraea</i>	X	



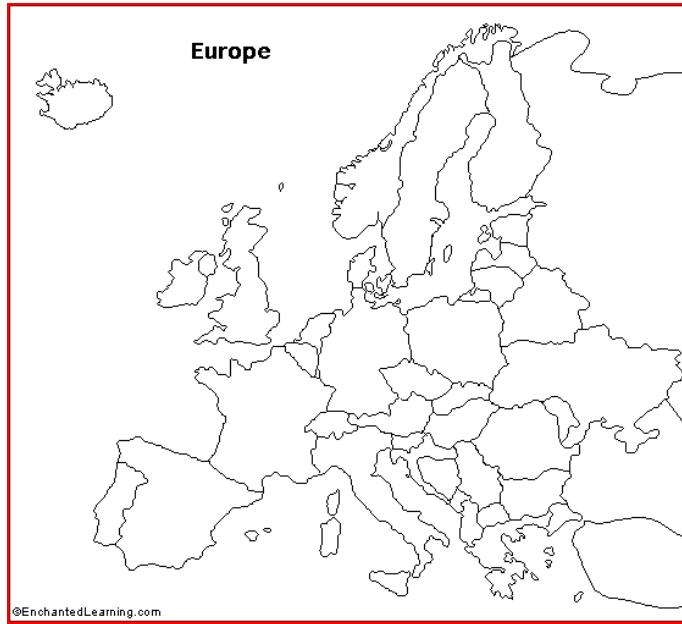
## Seed transfer today and the problems

- Some countries import seeds for cultivation in commissioned work (e.g. Netherlands) → distortion of statistics
- The origin can be different from the country from which the seeds are imported
- Import/ export data do not correspond with material really planted
- Bad/no documentation on the whereabouts of the seeds/seedlings

# Seed transfer today and the problems

- Reliable information/documentation on seed transfer/consumption by private companies/forest owners is rare
- Non-standardized data for the European Union

# Conclusions



- Numbers give a vague overview on the real transfer of FRM across Europe
- Serious lack of information concerning transfer and use of FRM

Seed transfer is not only a professional problem but also affected by the political and economical frame of the European Union