IUFRO Unit 2.02.07
Larch breeding and genetic resources
From the emergence of a group…

to nowadays

• 1944 & 1958 : W. Schmidt, R. Schober :
  1st and 2nd international IUFRO provenance trials (L.decidua)

• 1957/58 : W. Langner, Iwakawa :
  International IUFRO provenance trials (L.kaempferi)

• 1976 : establishment of the IUFRO Working group S2.02-07 ‘Larch provenances and breeding’

“The work of the Unit is mainly concerned with genetic variation in Larix, including variation in adaptation to environmental conditions, wood productivity and wood quality”
26-28/10/1987 : Fulda (Germany)

Dr. H.A. Gussone

‘Lärchen-Provenienzen’

- German speaking family group
- Larch international provenance testing results are at the core of the meeting
- Dr. Gussone’s interrogations about future of S2.02-07 group
- Dr. Gussone retires - Dr. H. Weisgerber new chairman
5-12/09/1992 : Berlin (Germany)

Dr. H. Weisgerber

‘Results and future trends in larch breeding on the basis of provenance research’

• The group opens
  • English speaking, more foreigners
  • Larch provenance testing is still at the core of the meeting but also more broadly to larch breeding
  • Opening towards Eastern Europe (field trip in CZ)
31/07-4/08/1995:
Remmingstorp and Siljansfors (Sweden)

Dr. H. Weisgerber

‘Research findings and ecological-silvicultural demands’

• The group keeps on with its opening
  • The group has really integrated the importance of Russian Larch forests and research; several Russians participate
  • Opening towards other themes (ecology, silviculture)

• Dr. Weigerber retires, Dr. Martinsson new chairman
Larix’98
1-5/09/1998 : Krasnoyarsk (Russia)
Dr. O.Martinsson

‘World resources for breeding, resistance and utilization’

• Geographic opening of the group is concrete: the group is faced with siberian forests
• joint meeting with divisions 5 & 7
Larix 2002

16-21/09/2002 : Gap (France)

Dr. O. Martinsson

*Improvement of larch for better growth, stem form and wood quality*

- joined IUFRO-EU ‘LARCH’ meeting
- widely open to all fields of research in relation to larch tree improvement (wood technology, silviculture, etc)
- *Dr. O. Martinsson retires, new chairman*
Larix 2004
26/09-1/10/2004 : Kyota-Nagano (Japan)
Dr. L.E.Pâques

Larch breeding and genetic resources

• wide range of scientific topics (genetics, breeding, wood sciences, ecology, physiology)
• excellent opportunity to discover Japanese research implication on Larix
Integrated Research Activities for Supply of Improved Larch to Tree Planting: Tree Improvement, Floral Biology and Nursery Production
World natural distribution of Larix species

- L. laricina
- L. occidentalis
- L. lyallii
- L. decidua
- L. sibirica
- L. gmelinii
- L. griffithiana
- L. potaninii
- L. olgensis
- L. mastersiana
- L. principis-rupprechii

Siblarch
Scandinavian-Russian project

LARCH
EU project
From genetic diversity studies and gene conservation... to tree breeding and use of genetic resources

- Genetic diversity studies and identification of gene conservation needs
  - static
  - dynamic

- Better understanding of genetic architecture of traits and coherent evaluation of genetic control of traits

- Development of indirect selection procedures for early selection

- Basic knowledge for initiating rationale hybridisation programmes

- Implementation of new breeding tools and mass-propagation techniques

- New valorisation of genetic field trials networks

- Deployment of international genetic trials

Research needs remain important
• New socio-economical context
  – Impact of breeding activities
  – New needs: new functions/ new products
• Increased complexity
  – New traits (adaptive traits, biomass, durability, etc)
  – New techniques
Future... is for more efficiency, more reactivity

- **Shorten time**
  - Early/indirect testing
  - Flower induction
  - Optimisation of variety outputs/new forms

- **Reduce costs**
  - High throughput phenotyping
  - Joined efforts

- **Increase precision**
  - Decomposition of complex traits
  - Combination of approaches
  - Better exploitation of field trials
  - Increase of number of testing environments

- **Change scale**
  - From regional/national to regional-wide breeding zones/programmes

- **Improve integration**
  - Biotechnologies in breeding programmes
  - From breeding to deployment: R&D chain
Future is for more broadened scope

**Interaction/impact**

Improved on natural populations/natural resources

Soft breeding

**Time-scale**: from short-term to long-term breeding: sustainability

**Space-scale**: from regional/national to European biogeographical zones

**Conservation**: management of natural resources

**Other economical priorities/uses**: selection criteria priority

‘Traditional’ objectives and ‘classical’ traits
Dramatic erosion/loss of research forces in breeding (funding, humans, facilities, etc)

Urgent need to join forces at regional levels at least
“Success in the fields of larch research depends in no small measure on close cooperation including task distribution among institutes. In the past, IUFRO has proved its value in the complex research on this tree species. Faced with many new study fields, both in genetics and breeding, we consider IUFRO to be a more indispensable institution than ever for productive research on larch”

How?

• Communication (papers, meetings, etc)
  – Precious not-anymore publishable results become more and more unavailable

• Joint experimentation
  – Would we still have the means for ambitious common testing, etc?

• Easier share of resources (plant material, access to trials, data?)
  – First thing is to be aware of first

• Exchange of technical/scientific expertise
• Joint research projects / breeding programmes