

## Editor's summary

*The following is the editor's condensed summary of the articles in the current issue, which has a purely Nordic flavour, with authors representing all five of the Nordic countries.*



Photo: Mats Hamner

*A model for estimating ages of dead, standing spruces is presented in this issue.*

- **Annika Parantainen** and **Hanna-Leena Pasonen** show that *in vitro* germination of Scots pine pollen is different if a single pollen source is tested than if the same pollen is tested along with pollen from another source. The interaction is only likely to have a minor influence on the general fertilization efficiency in seed orchards, but pollen-pollen interactions may be important for certain genotypes.
- Both the temperature and the length of exposure affect sensitivity to frost damage. **Francine Bigras** and her colleagues have evaluated the impact of combinations of sub-zero temperatures and length of exposure on white and black spruce seedlings at various stages of development. Their results suggest that temperature has a much greater influence than the length of exposure on the severity of damage.
- **Anna Saarsalmi** and colleagues compared different coniferous stands which had been treated either with wood ash alone or with a combination of wood ash and nitrogen fertilizer. Wood ash application increased pH and the concentrations of calcium and magnesium in the humus layer. However, wood ash application alone did not result in an increase in tree growth.

- Discoloration is a common cause of reduced timber value in birch. Darkening during drying is a difficult problem, and the application of different drying regimes has not provided a solution. In their study, **Katri Luostarinen** and **Veikko Möttönen** compare the effects of environmental factors on the concentration of proanthocyanins, the compounds directly responsible for such discoloration. They found only small differences when comparing growing sites, top and butt logs and felling seasons. However, boards sawn from the center of the logs had significantly higher concentrations.
- In Finland, birch timber has traditionally been harvested from old stands, but small-sized birch, removed in thinnings is becoming more attractive to sawmills. The quality of such timber, with respect to hardness and moisture content, was analysed by **Veikko Möttönen** and colleagues. Their findings include the fact that young timber is relatively soft, but its hardness can be increased with appropriate treatment.
- Good criteria for estimating the age of spruce snags, i.e. standing dead trees, have been lacking. In his study, **Ken Olaf Storaunet** analysed a number of indicators to determine the

time since tree death. He found that the best indicator was the number of branch orders present. The finest branches will erode and decompose quickest, leaving only the coarsest branches. Recently deceased trees still have fine branches to the fifth order, while trees with only branches of the second order have been dead, on average, 46 years.

- Land use and natural factors both contribute to current forest patterns. The combination of historical land use and initial ecological conditions are the basis of a synthesis article by **Stefan Zerbe**. He analysed an area in Germany and showed how the initial conditions affected land use, and have thus influenced the current landscape.
- **Helen Uliczka** and colleagues have interviewed forest owners in central Sweden about their knowledge and attitudes. Those who had attended short courses in forestry and conservation were more positive towards conservation. However, owners who were more economically dependent on forestry displayed less positive attitudes towards conservation.



# Latvian forest research

Since independence in 1991, the forest sector has grown to become one of the main contributors to the national economy of Latvia.

Several factors have facilitated this development:

- the forest resources are of high quality and easily accessible
- there is a long tradition of forestry
- the forest sector has adapted well to the market economy
- agreements have been reached between various interest groups on the long-term goals for the development of the forest industry.

The national forest policy, approved in 1998, outlines a number of goals for Latvian forestry: to preserve and increase the area of forested land and its productivity; to ensure sustainability within the forestry sector; to



Genetic improvement of Scots pine is an important topic at Silava. Amis Gailis and Imants Baumanis from Silava in a seed orchard. Photo: Björn Hamrup.

preserve biological diversity; to balance public and forest owners' interests with respect to social values and labour opportunities; and to ensure sufficient competence of those engaged in the forest sector.

### Administration

The Ministry of Agriculture is the central body controlling the management of the Latvian forests. The ministry supervises the State Forest Service, which is responsible for the implementation of forest policies on all forest land. The ministry also controls the state-owned company Latvian State Forests, which manages nearly half of the forested land in Latvia.

### Forest science

Forest science in Latvia builds on German and Russian traditions. The foundation of the Baltic Foresters' Society in 1867 is regarded as the start of Latvian forest research. The Latvian Forest Research Station was set up in 1928.

At present, forest-related research is concentrated in the forestry faculty at the Latvian University of Agriculture (LUA) and the Latvian State Forestry Research Institute (Silava).

Wood research is conducted at the Latvian State Institute of Wood Chemistry.

The training of forest specialists takes place at LUA and at two technical colleges in *Ogre* and *Aizupe*.

### Latvian forest statistics

**Forest land area:** 2.9 million hectares (44.5% of the total area)

**Growing stock:** 585 million m<sup>3</sup>

**Annual harvest:** 11.3 million m<sup>3</sup>

**Number of private forest holdings:** 117.000

**Average size of private forest holdings:** 13.1 ha (2/3 less than 10 hectares)

**Ownership:**

State: 1.46 million ha (51%)

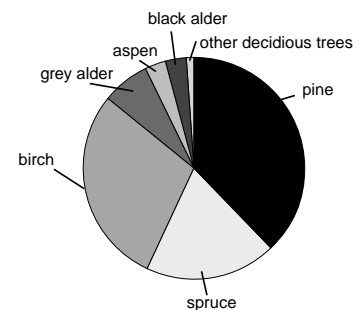
Private: 1.30 million ha (45%)

Others: 0.12 million ha (4%)

**Roundwood exports:** 4.2 million m<sup>3</sup>

Source: *Forest Sector in Latvia 2003*, Ministry of Agriculture

### Tree species by land area:



The proportion of conifers is much higher on state-owned forest land (pine + spruce 69%) than on private-owned land (pine + spruce 44%).

## Silava

The Latvian State Forestry Research Institute "Silava" is the leading forestry research centre in Latvia. It was founded in 1946 and is a member of both the IUFRO and the EFI (European Forest Institute).

The total number of research workers is currently (2004) 63, 23 of whom hold science doctorates. The headquarters of Silava is located in *Salaspils*, outside Riga. The major objectives of the institute are to research into forest ecosystems and their components and draw up recommendations for sustainable forest management and efficient utilisation of forest resources and forest products.

The institute carries out research in the following subject areas:

### Forest ecology and silviculture

#### Examples

- Modelling the effects of stand management on hydrology from long-term hydrological observations at the forest ecology research station *Vesetnieki*
- The impact of climate change and environmental pollution on forest stand development.

### Forest tree breeding and genetics

#### Examples

- *In-vitro* propagation methods for broadleaved trees
- Progeny testing of fast-growing aspen hybrids.



*The Silava Head Office outside Riga*

### Forest regeneration and establishment

#### Examples

- Establishment of tree plantations with multiple-goals, including Christmas tree production, short-rotation bio-fuel crops, and wild cherry timber production
- Development and establishment of mycorrhizae in container stock
- Establishment of birch plantations on abandoned farmland.

### Forest protection

#### Examples

- The risk of pests associated with logging residues
- Attracting hole-nesting birds to forests.

### Game management

#### Examples

- Developing methods to balance animal populations and available food
- Use of repellents for protecting forest crops from browsing.

### Forest operations

#### Examples

- Strip-road density and the impact of forest machines on stand and environment

- Planting equipment for bare-root and container stock.

### Processing of forest products

#### Example

- Integrated research on the utilization of non-wood forest products (foliage, bark etc.). Twelve biologically active substances for use in agriculture, the food industry, cosmetics, pharmaceuticals and household products have been developed, registered and production has begun.

### Hydrothermal and chemical treatment of wood

#### Examples

- Drying regimes for kilning sawnwood
- Low-toxicity wood preservatives and fire retardants.

### Forest economics and forest policy

#### Examples:

- Management models for forest estates
- Models for forest valuation with respect to multiple uses.

Contact: [inst@silava.lv](mailto:inst@silava.lv)

## Forest faculty at the Latvian University of Agriculture

The predecessor of the Forest Faculty, the Department of Silviculture, was established in 1919 as a branch of the Faculty of Agronomy. It acquired its present name in 1991. Currently there are four departments in the faculty:

- Silviculture
- Forest utilization
- Wood processing
- Working environment

Undergraduate courses, leading to bachelor's degrees in wood processing, wood processing technology, forest science, forest engineering and forestry, are available.

In addition to these four-year courses, it is possible to obtain a Master's degree after an additional two years of study.

Doctoral studies, leading to a PhD, take a further three years.

The teaching staff consists of 37 teachers.

Contact: *Dagnis Dubrovskis* (dean of Forest Faculty): [mfddek@cs.ltu.lv](mailto:mfddek@cs.ltu.lv)



# Lithuanian forest research

**Lithuania has undergone a sharp transition from a political culture based on a centrally planned economy and one-party system to a market economy and a democratic political system.**

After the declaration of independence in Lithuania in 1990 there were a number of important developments in the country's forestry: the formation of a free timber market; increasing timber export levels; new modes of ownership (private forests) and enterprise (private logging companies); and the privatisation of the forest industry.

The first description of Latvian forests, in the form of a forest inventory, dates back to the 16th century. The roots of Lithuanian forestry research were established in the 19th century when botanical studies of the forest were undertaken.



*Indoor seed orchard with birch in Lithuania. Photo: Vidmantas Verbyla.*

However, forest science developed during the period of independence between the first and second World Wars.

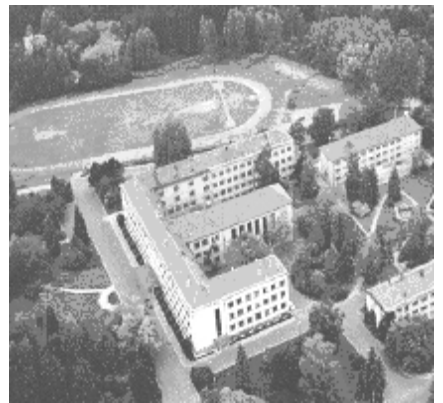
The Lithuanian Forest Research Institute (LFRI) is the main forest research organisation in Lithuania.

The Lithuanian Agricultural University (Faculty of Forestry) and the Kaunas College of Forestry and Environmental Engineering are institutions of higher education involved in forestry.

Research on stand stability, stand productivity and integrated forest monitoring is concentrated at the Faculty of Forestry. Undergraduate

and post-graduate studies in forestry and applied ecology are the major concerns.

*The LRFI Head Office in Girionys*



## Lithuanian forest statistics

**Forest land area:** 2.0 million hectares (30.6% of the total area)

**Growing stock:** 380 million m<sup>3</sup>

**Annual increment:** 12.0 million m<sup>3</sup>

**Annual harvest:** 6.3 million m<sup>3</sup>

**Number of private forest owners:** 180.000 (the total population is 3.5 million)

**Ownership:**

State: 50%

Private: 31%

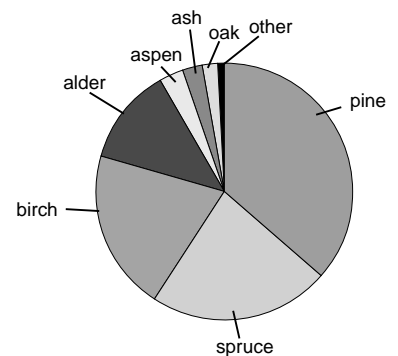
Reserved for restitution: 19%

**Roundwood exports:** 1.4 million m<sup>3</sup>

**Sawnwood exports:** 1.4 million m<sup>3</sup>

*Read more: [www.lvmi.lt](http://www.lvmi.lt)*

## Tree species by land area:



## The Lithuanian Forest Research Institute (LFRI)

LFRI was established in 1950. During the following 50 years, the institute's scientific activities have included studies of forest biology and ecology, forest typology, forest hydrology, stand productivity and stability, harvesting, forest regeneration, forest genetics and tree breeding, forest management, forest economics, forest protection and game management.

LFRI is a state institute under the auspices of the Ministry of Education and Science. It is associated with the Lithuanian Academy of Sciences and is a member of IUFRO. Its main scientific research areas have been set by the Government, as follows:

- biological diversity and sustainability of forest ecosystems;
- reforestation, forest productivity, protection and utilization;
- conservation of forest genetic resources, forest tree breeding;
- forest policy, social and economic problems.

The research is divided into six departments:

- Silviculture
- Ecology
- Forest genetics and breeding
- Forest protection and game management
- Forest resources, economics and policy
- Molecular genetics and biotechnology.

The staff numbers 86, about 45 of whom are researchers. More than 20 of these have a scientific degree. Most of the people work at the head office in Girionys, Kaunas district.

There are 20 postgraduate doctoral degree students at LFRI.

The total annual research budget of LFRI is approximately 2 million Lt (1€=3.45 Lt), half of which is provided by the state. The other half comes from various international programmes and commissions from the forest sector.

*Read more: [www.mi.lt](http://www.mi.lt)*

### Serial publications from LFRI



Baltic Forestry, the Journal of Forest Science in Lithuania, Latvia and Estonia, is an international peer-reviewed scientific journal (in English, with summaries in Russian). It is published twice a year, jointly by several universities and institutes in Latvia, Lithuania and Estonia.



Miškininkystė (Forestry), the Journal of Forest Science, is published in cooperation with the Lithuanian Agricultural University (in Lithuanian, with summaries in English and Russian).

## Examples of ongoing research at LFRI

### Contemporary deterioration of forest ecosystems (2003–2008)

The main task of this research is to estimate the influence of drought, soil chemical deterioration, nitrogen pollution and the decline in tropospheric ozone on Lithuanian forest ecosystem components: trees (stem growth, foliage and roots), ground vegetation (diversity) and soil (chemical composition and biological activity).

*Contact: Prof. Remigijus Ozolinėius, [miskinst@mi.lt](mailto:miskinst@mi.lt)*



### Identification of genetic polymorphism and assessment of the embryogenic culture of forest trees (2001–2005)

The main research is directed towards application of isolated tissue and cell cultures, DNA fingerprints and biochemical–physiological techniques in tree breeding and biotechnology.

*Contact: Ass. prof. Sigutė Kuusienė, [biotech@mi.lt](mailto:biotech@mi.lt)*

### Economic regulation of Lithuanian state and private forestry (2000–2004)

The main interests are: strategic planning of forestry, analysis of the problems and needs of private forest owners, the compensation system for restrictions to forest activity in protected areas and cost–benefit analysis of using wood for energy production.

*Contact: Dr. Stasys Mizaras, [ekonsk@mi.lt](mailto:ekonsk@mi.lt)*

# Bilateral investment in wood material science

**Wood is an excellent material for new eco-efficient products and processes. However, if wood is to maintain its position as a competitive raw material, new innovations must be continuously produced and marketed. This is the challenge for a new bilateral Swedish–Finnish project.**



*The logotype for Wood Wisdom Programme, the predecessor of the new joint research programme*

The Finnish-Swedish Wood Material Science Research Programme (2003–2006), is a bilateral continuation of the Finnish Wood Wisdom Programme (see News & Views 3, 2003).

The aim of the new programme is to promote the competitiveness of the forest sector by establishing a better knowledge base related to wood material science.

The new programme supports collaborative networks of researchers and industrial staff across the whole field of wood material science, from the basic genetic control of fibre production to the development of new composite and modified wood products.

The first sub-programme, for basic research, started in the first half of 2003, focusing on wood properties and methods for modifying them.

The second sub-programme, which started in 2004, focuses on innovation targeted research and development. This sub-programme has received

public funding amounting to 8 Million Euro. In April 2004, an opening seminar for this new sub-programme was held in Helsinki.

The programme and ongoing projects are presented in the Wood Material Science Year Book 2004, which can be downloaded from the Wood Wisdom webpage ([www.woodwisdom.fi](http://www.woodwisdom.fi)).

#### Founders:

- the Academy of Finland
- the Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (Formas)
- the Ministry of Agriculture and Forestry of Finland
- the National Technology Agency of Finland (Tekes)
- the Swedish Agency for Innovation Systems (VINNOVA).

## Eight innovation targeted projects

The following eight innovation-targeted projects began in early 2004 (the coordinating organisation is given in brackets):

1. Value-added products from the bark of Nordic wood species, using bioconversion and chemical technology (*VTT Biotechnology*)
2. New cellulose derivatives from wood for high value products (*The Royal Institute of Technology, KTH*)
3. Nanostructured cellulose products (*Swedish Pulp and Paper Research Institute, STFI*)
4. New eco-efficient, durable and high performance wood composites (WPSs) and wood-WPC-hybrids for joinery products (*VTT Building and Transport*)
5. Eco-efficient modified wood products (*Swedish Institute for Wood Technology Research, Trätek*)
6. Innovative, eco-efficient, highly fire resistant wood products for demanding applications (*Swedish Institute for Wood Technology Research, Trätek*)
7. Innovative designs, new strength theories, quality assurance and reliability of structural timber systems (*VTT Building and Transport*)
8. A multi-sectorial database, model systems and case studies supporting the innovative use of wood and fibres (*STFI-Packforsk*)

## Contact News & Views

Write to the secretariat of SNS, The Nordic Forest Research Cooperation Committee:  
att: Olav Gislerud  
The Research Council of Norway  
P.O. Box 2700 St. Hanshaugen  
N-0131 Oslo, Norway  
[og@forskningsradet.no](mailto:og@forskningsradet.no)  
[www.nordicforestresearch.org](http://www.nordicforestresearch.org)

We strongly encourage our readers to contribute to a lively and interesting journal. Letters to the News & Views section will be published if they are:

- short
- relevant to the Journal
- interesting for the readers.

**Examples:** comments on papers published in the Journal, views on ongoing research, trends in research policy, opinions about forestry practice etc.

News & Views is edited by  
Mats Hannerz  
[mats.hannerz@skogforsk.se](mailto:mats.hannerz@skogforsk.se),  
and produced by  
Carl Henrik Palmér. [chp@areca.se](mailto:chp@areca.se)