

FINNISH
FOREST
RESEARCH
INSTITUTE

METTLA

● Kolari

● Rovaniemi

● Muhos

● Kannus

Suonenjoki

Joensuu

Parkano

Punkaharju

● Vantaa/Helsinki

METLA

- builds the future of the forest sector through research -



Founded in 1917, the Finnish Forest Research Institute (Metla) is Finland's central forest research organisation. Metla is an independent state research institute, which, in accordance with its mission statement, contributes to the future of the forest sector by means of scientific research.

Research work at Metla is carried out at nine target units, these being the Vantaa and Joensuu research centres and seven regional research stations across the country. Metla's target areas cover research, research forests, laboratory activities, communication and information services, international activities, and support services.

Metla has a staff of over 800 people, some 250 of them being researchers. About half the staff works in the Helsinki metropolitan area and the other half at regional research stations. Most of the funding for Metla's activities comes from the national budget.

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Research

Research work at Metla has been organised into over 160 problem-oriented projects. The foremost projects have been combined under research programmes. There are currently eight research programmes under way:

- ♦ Pools and fluxes of carbon in Finnish forests and their socio-economic implications (2001-2005)
- ♦ Forest tree breeding (2000-2001)
- ♦ Forest management planning (1999-2005)
- ♦ Alternatives of silvicultural practices in forest management and their effects on forest production (2000-2004)
- ♦ Ecologically and economically sustainable forestry on drained peatlands (1999-2003)
- ♦ Competition and public support in forestry (1998-2002)
- ♦ National forest inventory (1998-2004)
- ♦ Forest regeneration in Southern Finland (1998-2002)

Research Director

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Publications

Together with the Finnish Society of Forest Science, Metla publishes two scientific series:

- ♦ **Silva Fennica**, a forestry journal in English, aimed at the international audience,
- ♦ **Metsätieteen aikakauskirja**, a forestry journal containing articles on research matters and current topics as well as reviews in Finnish and Swedish.

Other publications by Metla:

- ♦ **Metsäntutkimuslaitoksen tiedonantoja**, a series presenting research results of current interest, especially those serving the needs of practical forestry, mainly in Finnish,
- ♦ **Statistical Yearbook of Forestry** containing comprehensive statistics on forest resources and forestry,
- ♦ **Forest Statistical Bulletins**, presenting recent and detailed information on topics such as fellings, imports and roundwood prices, published in Finnish,
- ♦ **Finnish Forest Sector Economic Outlook**, published annually, contains forecasts concerning the development of the forest sector,
- ♦ **Metsäntutkimus**, a customer journal dealing with current research projects and other news connected to forest research in a down-to-earth manner, mainly in Finnish.

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Research forests and laboratory activities

Metla's **research forests**, with a combined area of 90 000 hectares, serve the needs of research, conservation, recreation, and nature tourism. The network of research forests creates the basis for extensive and long-term research and experiments.

Laboratory activities of high standard constitute a fundamental aspect of the many sub-areas of forest research. Metla's **central laboratory** operates in connection with the Vantaa Research Centre. In addition, the research stations have their own **regional laboratories**.

International activities

Metla co-operates closely with several international organisations. One of Metla's most important international contacts is IUFRO (International Union of Forest Research Organizations), whose president for the 5-year term 2001 - 2005 is Professor Risto Seppälä from Metla. Other important partners include the European Forest Institute, the Nordic Forest Research Co-operation Committee (Samnordisk Skogforskning, SNS), and the European Union. More than thirty of Metla's projects are based on agreements with the EU.

Information services and expertise

Metla's research information and expertise are available to the information end-users in the forms of publications, information services, expert services, and press releases as well as different customer-tailored products.

Metla takes responsibility of a number of essential information services and official duties in the forestry sector. The following **national official duties** have been delegated to Metla in legislation:

- ◆ National forest inventory
- ◆ Monitoring of forest health
- ◆ Forest statistical information service
- ◆ Forest damage diagnostic and advisory service
- ◆ Registration of forest tree seeds and planting materials
- ◆ Testing and inspection of pesticides
- ◆ Basis for forest taxation
- ◆ Timber scaling methods and guidelines
- ◆ Monitoring of regeneration of protection forests at the northern timberline

The **Metinfo -forest information services** on the Internet provide up-to-date information and expert services related to forests, their management and use, and forest nature. The services currently include forest statistics, a forest owner information service, forest condition and health services, information on phenological observations in the forests, and the MELA forestry modelling and analysis system, an information service for forest tree nurseries, information on multiple use of forests, and on-line monitoring of tree growth.

Commissioned projects - research, lectures and consultation - are tailored to meet the needs of the customer. Furthermore, Metla's publications, photo-archive, laboratories, information and expert services and other expertise are at the customer's disposal.

Metla's **Communication Unit** serves in all issues connected to Metla's activities. The unit provides information on the latest research results, publishes bulletins and brochures, and is responsible for Metla's annual report.

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VANTAA RESEARCH CENTRE

- Produces basic information on ecologically, socially and economically sustainable forest use,
- bears the main responsibility within Metla for serving the national forest policy and forestry sector and other interest groups, and
- is responsible for the management of research forests in southern Finland.

Vantaa Research Centre has a staff of 400, of whom 170 are researchers. Research work has been divided between two units, one in Vantaa and the other in Helsinki. Vantaa Research Centre operates in close co-operation with several other research institutes in Finland and abroad.



Research priorities

Vantaa Unit:

Functioning of Forest Ecosystems and Forest Health is a research priority encompassing research on forest soils, forest pathology, and forest zoology. National and international monitoring of forest health has been developed at Vantaa Research Centre, which has resulted in extensive co-operation in Finland and abroad. Forest Damage Monitoring and Advisory Service is a practical application of the expertise of the centre's entomologists and botanists.

Forest Genetics and Forest Tree Breeding is a research priority covering research on the genetics of forest trees and their breeding. Practical breeding work is carried out at Metla's Haapastensyrjä Tree Breeding Station in Loppi.

Silviculture and Forest Biodiversity delves into the impacts that forestry has on the yield of wood and biodiversity of forests. This field of science has in recent years expanded to cover the growth impacts of long-term climate and other environmental changes.

Helsinki Unit:

Research under the priority **Social and Techno-Economic Research** is conducted by staff characterised by their diverse expertise on the forest sector. Research undertakings focussing on forest and environmental economics and forest policy seek to meet the forest sector's extensive information needs.

Forest Resource Statistical and Information Systems is a research priority aimed at producing basic information on the Finnish forest sector. National Forest Inventory (NFI) is a monitoring system for assessing the nation's forest resources. It produces large-scale and small-scale information on forest resources and forest ecosystems in general. Forest Statistical Information Service draws up Finland's official forest statistics and develops forest sector's information production.



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JOENSUU RESEARCH CENTRE

Joensuu Research Station was established in 1981 and upgraded to research centre status at the beginning of 2001. Joensuu Research Centre is a multi-disciplinary expert organisation, which promotes the forest sector at regional and national levels through research conducted on forests, the forest environment, and wood as a raw material.

There are four **prioritised research areas** at Joensuu: research and development of forest management planning, silviculture, forest technology, and wood science. Research in these fields is reinforced by studies of the environmental impacts of forestry, economics of forestry and forest industries, and international forestry.

Joensuu Research Centre is engaged in close, daily **co-operation** with the Faculty of Forestry at the University of Joensuu and the European Forest Institute (EFI). It participates in information exchange projects together with the Centre

of Expertise for Wood Technology and Forestry via its PUUGIA Project.

One part of Joensuu Research Centre is **Koli National Park**. The park, with its visitor centre, serves the public as an important preserver of heritage landscapes and a venue for presenting research results.

Joensuu Research Centre is entrusted with the co-ordination of two **research programmes**:

- Forest management planning
- Forest regeneration in Southern Finland

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PUNKAHARJU RESEARCH STATION

Punkaharju Research Station specialises in forest genetic studies such as biotechnology, resistance breeding, and seed production, and in research focusing on wood quality properties and the environmental adaptation of trees. Matters related to growing of exotic and special tree species are also studied at the station.

The aim of the **biotechnology** research is to preserve the genetic diversity of trees and to find out more about their genetic regulation and structure, and the possibilities to transfer useful genes.

Resistance breeding is carried out to develop birches capable of resisting various damaging agents such as mammals, insects and fungi.

Seed orchard research aims at producing high quality seed for forest sowing. **Adaptation research** looks into survival of trees in different environmental conditions, e.g. under climate change due to the greenhouse effect.

Punkaharju is home to an **arboretum** about five hectares in size, and a park-like forest area containing more than 40 coniferous species and 20 species of deciduous trees. One part of the research area is the first **gene-reserve forest** in Finland. The purpose of this forest is to help retain the genetic variation of Finland's natural forests.



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PARKANO RESEARCH STATION

Metla's first regional research station was established in Parkano in 1961. Today, this research station's priorities include forest health, and forestry with its fundamental aspects in peatland areas in particular.

Parkano Research Station co-ordinates the pan-European **research on and monitoring of forest health** in Finland. The emphasis of the research is on the interconnections between the health of trees and various stress factors as well as on the disturbances in nutrient status. In the field of **radioecology**, research is being conducted on the impacts of forest management on the behaviour of radioactive substances in forest ecosystems.

The focus of **peatland forestry research** is on management of nutrient status, ditch network maintenance, and regeneration of peatland forests. Furthermore, the work done at the research station also covers the forestry on former peat-excitation sites.

Other research topics include forest regeneration and thinning, silviculture of pendula and pubescent birch, machine oils used in forestry, and seed-supply issues.

Parkano Research Station is the co-ordinator of the **research programme** entitled Ecologically and Economically Sustainable Forestry on Drained Peatlands (1999 - 2003).



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SUONENJOKI RESEARCH STATION

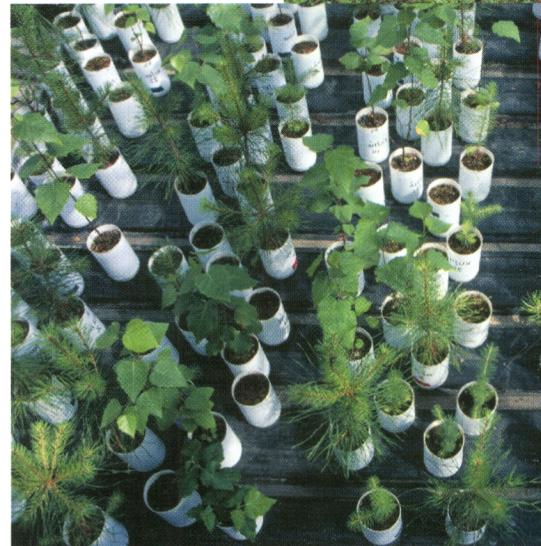
The main tasks of the Suonenjoki Research Station are to conduct research in forest tree nursery production and forest regeneration, and to transfer research knowledge to practical forestry. Other research topics are tree ecophysiology, forest health and methods of forest management planning. Finland's only research nursery is part of the station.

Plant production methods to produce good quality seedlings at less cost and in an environmental friendly manner are developed at the nursery. Improvement of water retention properties of the peat used as the plant substratum and research on speeding the hardening of the plants with short-day treatments and plant hormones are essential aspects of research.

Forest regeneration research aims at developing a system which allows the regional forestry authorities to cost-effectively monitor the quality of forest regeneration activities. Mechanisation of seeding and planting as well as development of summer-

time planting methods in order to eliminate labor peaks in the spring are further aspects of the research.

Eco-physiological research produces information on the vital functions of trees and develops research methods which can be adapted to nursery research and forest regeneration research.



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KANNUS RESEARCH STATION

The focus at Kannus Research Station is on research and development tasks important for the region of Pohjanmaa and its neighbouring areas. Special emphasis is placed on research topics possessing also national and international importance.

The station's principal research topics are derived from the local forests characterised by the large proportion of small-diameter trees, the abundance of peatland forests, the predominance of non-industrial private forest ownership, and the geologically young age of the land along the coast of the Gulf of Bothnia.



As regards **forest regeneration research**, a current challenge is issued by the implementation of the regeneration of the ageing pubescent birch stands in the coastal areas of Pohjanmaa.

The prioritised research areas are energy use of wood, non-industrial private forestry, forest management planning, and the forests of and forestry in the coastal areas of the Gulf of Bothnia.

Other issues addressed at Kannus include peatland forestry, afforestation of former agricultural land, forest inventory, GPS (global positioning system) applications, and applications of information technology in forestry. Wood-energy research involves the also development of small forestry machinery.

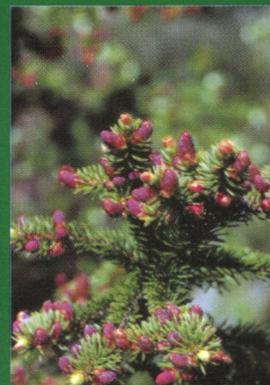
MUHOS RESEARCH STATION

Muhos Research Station's research activities focus on the ecology of forest regeneration and the changes taking place in the forest environment, along with the development of silvicultural methods appropriate for the region of Pohjanmaa-Kainuu.

The focus of **peatland forestry research** is on the long-term effects of drainage and fertilisation. The **utilisation of wood ash** as a fertiliser in peatland forests is being examined from the viewpoints of both fertilisation and environmental effects.

Heavy-metal deposition is being studied with the help of permanent experimental plots. Muhos Research Station has a laboratory specialising in analyses of nutrients and heavy metals.

The station is also responsible for storing all the samples intended for long-term retention in the **Paljakka environmental sample bank**. Forest research and the region's nature are on display at the research station itself, in the Paljakka exhibition facility, and along the excursion routes set up in connection with experimental fields.



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ROVANIEMI RESEARCH STATION

Rovaniemi Research Station conducts research on the special characteristics of boreal forest ecosystems and their values in order to reconcile the different forest uses. Special research priorities include the development, management and use of forests in Lapland, the boreal forest ecosystems' susceptibility to disturbance, and nature conservation

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The **management and use of forest ecosystems** are examined especially through models illustrating their development. **Forest regeneration research** concentrates on the habitat requirements of tree species and the initial development of seedlings. **Silviculture research** focuses on the impacts of silvicultural measures.

A research project entitled **Susceptibility of Boreal Forest Ecosystems to Disturbances and Change** studies natural agents of damage as well as man-made disturbances. Rovaniemi Research Station also conducts research on the changes taking place in the health of Lapland's forests.

The **various forms of forest use** in Lapland and their reconciliation are studied especially from the angle of nature tourism and reindeer husbandry. Forest-related values and sustainable use of forests are other topics of research.

Rovaniemi Research Station has close contacts with northern research institutes and universities in Finland and abroad.



KOLARI RESEARCH STATION

Research at Kolari Research Station focuses on management and sustainable use of timberline forests, and reconciling the multiple uses of forests.

Kolari Research Station conducts research on the **mechanisms of change impacting timberline forests** by applying ecological, eco-physiological and dendrochronological methods with due consideration for the timberline area's geodiversity and susceptibility to disturbances.

Silvicultural alternatives are studied taking into consideration both the tree species' habitat requirements and the restrictions imposed by other uses, especially reindeer husbandry.

Reconciling traditional livelihoods (e.g. reindeer husbandry), forestry, nature tourism and recreational use serves environmental conflict management and land-use planning.

Kolari Research Station's sphere of responsibility covers the research areas of Kilpisjärvi, Kolari and Laanila. These areas include Malla Nature Park, Saana Conservation Area and Saariselkä Holiday Centre.

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