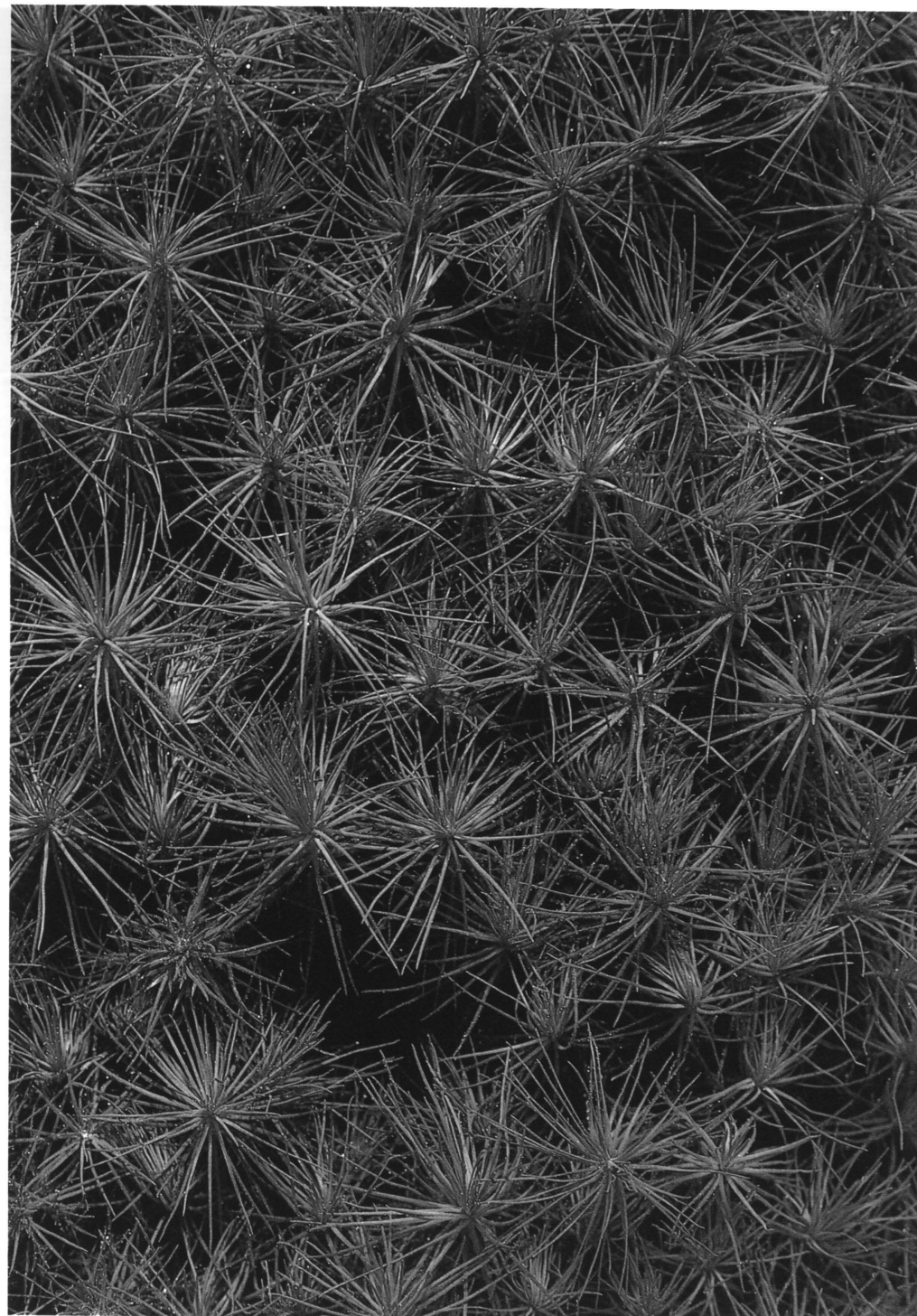


RESEARCH IN FORESTRY AND WOOD SCIENCE IN FINLAND



THE SOCIETY OF FORESTRY IN FINLAND

RESEARCH IN FORESTRY
AND WOOD SCIENCE IN FINLAND

THE SOCIETY OF FORESTRY IN FINLAND

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HIGHER EDUCATION AND RESEARCH IN FORESTRY: HISTORICAL PERSPECTIVES

EARLY PHASES OF FORESTRY AND FOREST RESEARCH

Forestry research and higher education in Finland came into being soon after the middle of the 19th century. Their inception at this time is not surprising, for there were already, particularly in Western Europe, powerful forces at work that obviously stimulated interest in forest resources and emphasized their importance. There was, for example, the intense economic development generated by the industrial revolution, including an especially great increase in building activity; there was the emergence of the liberal economic policy which eliminated many highly protective tariffs; there was rapid technical evolution in transport facilities; and there were great improvements and expansion in saw-milling, followed later by similar developments in other wood-using industries.

The development described above led to the establishment of the National Board of Forestry in 1851, at first on a temporary basis, but permanently in 1859. Among the provisions of this establishment was the domestic education of foresters and the initiation of forestry research.

INITIAL PHASES OF HIGHER EDUCATION IN FORESTRY

Higher education in forestry began in Finland in 1862 at a forestry institute at Evo, 120 kilometres north of Helsinki. Although the principal task of the school was to educate forest officers in the service of Finnish state forestry, members of the teaching faculty were also able to initiate forest research. A. G. Blomqvist, the most outstanding teacher of the school, published a number of papers on the results of his studies and wrote textbooks on silviculture and forest policy. In recognition of his scientific work he received the honorary degree of Doctor of Philosophy at the University of Helsinki in 1897.

A. G. Blomqvist served as a teacher at Evo during 1862—1903, and for the greatest part of this time (1870—1903) he was the principal of the school. However, it became increasingly clear that the remote location of Evo presented higher education in forestry with numerous disadvantages and hindered its scientific development.

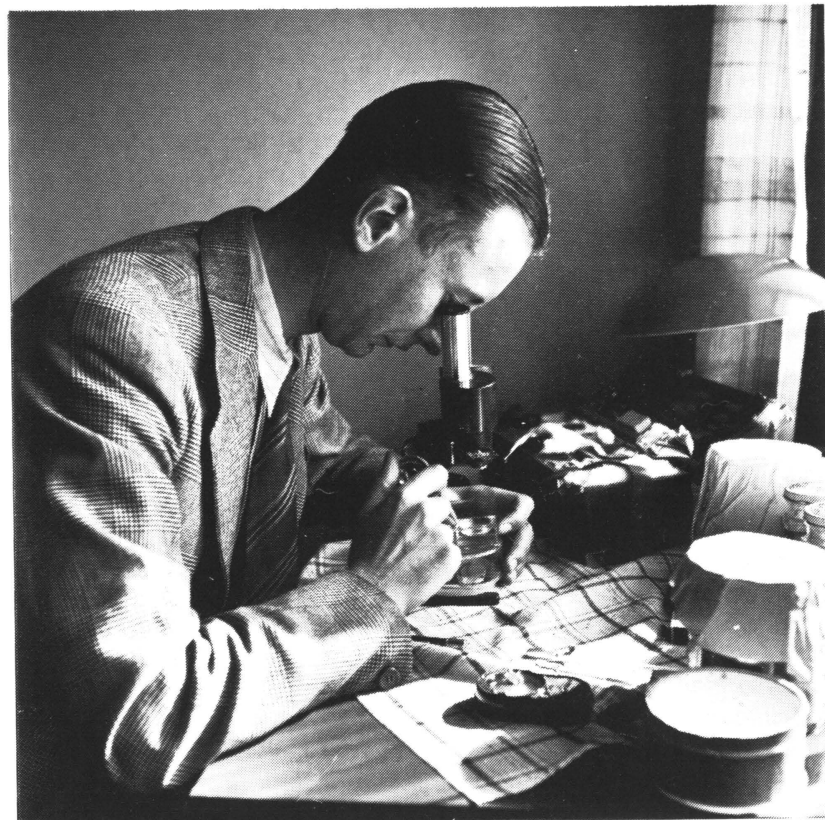
NEW ORGANIZATION OF FORESTRY RESEARCH AND HIGHER EDUCATION

At the beginning of the 20th century the Government assigned A. K. Cajander to organize academic forestry education and research in Finland. After completing visits to Germany, Austria, Switzerland, Denmark and Sweden in 1907—1908, Cajander carried out following measures for the promotion of forestry research in Finland:

- (1) He organized the transfer of higher forestry education from Evo to Helsinki, acting as the first professor of silviculture in 1908—1934.
- (2) He made the plans for state Forest Research Institute according to the ideas he had received in Central Europe.
- (3) He established the scientific Society of Forestry in Finland acting as its first secretary in 1908—1917.

FACULTY OF AGRICULTURE AND FORESTRY, UNIVERSITY OF HELSINKI

It was decided in 1907 to move higher education in forestry from



After a day in the northern woods, scientist carries on in a makeshift laboratory, his hotel room. The photo dates back to 1939.

Evo to the University of Helsinki, where higher education in agriculture had already been transferred from Mustiala in 1896—1906. The transfer of higher education in agriculture had resulted in the establishment of a special Section of Agriculture in the Faculty of Philosophy in 1902. Forestry education was amalgamated with this in 1908. In 1924 the Section became the Faculty of Agriculture and Forestry.

At the outset, two professorships in forestry were founded in this new Section. One for silviculture (established in 1907) and other for forest mensuration (1907). The following chairs have subsequently been founded: forest policy (1923), logging and wood technology (1930), peatland forestry (1937), business economics of forestry (1947), logging and wood technology (1948 to be held by a professor using the Swedish language), and forest products marketing (1959). In addition, holders of chairs of agricultural and forest zoology (1921), plant pathology (1921), plant breeding (1968), and land use economics (1973) also serve forest education.

The following positions of associate professors have been established: associate professor of silviculture (1907; between the years 1907—1978 the position was called forest officer), forest mensuration (1962), logging and utilization of forest products (1967), forest products marketing (1983) and forest soil science in 1987. In addition to the members of the Faculty already mentioned, there are numerous other teachers (senior lecturers, assistants) who lecture in different subjects.

To facilitate the practical field training of forestry students, Forestry Field Station at Hyytiälä was established in 1910, soon after the transfer of higher education in forestry from Evo to Helsinki. A part of the Korkeakoski Forest District was then assigned as the regular outdoor laboratory and training grounds for diverse field courses in forestry. The first buildings of the Forestry Field Station were ready for occupation in 1912. A number of new buildings, including laboratories, auditoriums as well as accommodation of students and members of the staff, have since been added (1961—1977).

FACULTY OF FORESTRY, UNIVERSITY OF JOENSUU

Higher education in forestry was established at the University of Joensuu in 1981. Forestry education was first a part of the Department of Chemistry and Biological Sciences, until a faculty of forestry was founded in 1984.

To date, the following professorships have been established: silviculture (1981), growth and yield studies (1983), forest management planning (1985), and forest technology (1988). The following chairs of associate professors complement the staff: forest mensuration (1981), forest pathology (1981) and forest economics (1984). In addition, the staff includes a number of



Mekrijärvi Research Station, University of Joensuu.

other teachers (senior lecturers, assistants). Mekrijärvi Research Station serves as the base for diverse field courses in forestry.

SOCIETY OF FORESTRY IN FINLAND

As a result of the activities of A. K. Cajander, the Society of Forestry in Finland was established in 1909. The Society acted as a link between researchers and forest officers providing them a common forum regular meetings for discussion and for introducing reports. In 1913, the Society started to publish *Acta Forestalia Fennica*, the first scientific series of forestry research in Finland. In 1926, the Society launched another publication, *Silva Fennica*, which has been published as a quarterly journal since 1967.

THE FINNISH FOREST RESEARCH INSTITUTE

The Finnish Forest Research Institute was established through a Senate decree of October 24th, 1917, only a few weeks prior to the date (December 6th, 1917) of Finland's Declaration of

Independence. The Institute started its activities on July 1st, 1918.

The Forest Research Institute is subordinated to the Ministry of Agriculture and Forestry. Originally it comprised the three professorships of silviculture, of forest inventory and yield, and of forest soils. The chairs soon expanded into respective departments. The following additional departments were established at later dates: Forest Economics (1928), Peatland Forestry (1928), Forest Technology (1931), Forest Biology (1953), Mathematics (1967), Forest Zoology (1967) and Forest Genetics (1968).

In 1972, the departments of Forest Biology and Forest Zoology were combined to form the Department of Forest Protection.

Originally, research work was undertaken solely by the various research departments. Since 1961 regional forest research stations have been in operation. For the time being the Institute operates eight research stations. In addition, the Institute has two field stations concentrating on more specific questions.

Reservation of experimental areas for the use of the Institute was included in the proposal of A. K. Cajander and the first experimental forests were established in 1923—24. The total area of research areas has subsequently been increased covering today more than 80 000 hectares fairly evenly distributed throughout the country. Since 1939, national parks and nature conservation areas have been established on state-owned land in Finland. Of these, two national parks and five nature reserves, a total of 60 000 hectares, are administrated by the Forest Research Institute.

UNIVERSITY OF HELSINKI

FACULTY OF AGRICULTURE AND FORESTRY, UNIVERSITY OF HELSINKI
Helsingin yliopiston maatalous-metsätieteellinen tiedekunta

Address: Unioninkatu 40 B
SF-00170 Helsinki
FINLAND

Telephone: +358 0 19 241

Telefax: +358 0 708 5011

Telex: 125 181 hyfor sf

Staff: 135

Students: 2500

Status: university faculty

Publications: research notes and reports published by the departments

Information on research results: Ms Annikki Karjalainen, librarian, Forestry Library

STUDIES AND DEGREES

At the Faculty of Agriculture and Forestry, the following degrees can be taken:

- Master of Science in Agriculture and Forestry
- Licentiate of Science in Agriculture and Forestry
- Doctor of Science in Agriculture and Forestry

The Master's degree can be earned through a great number of alternative programmes. These are grouped into master programmes according to specific professional aims.

The two master programmes and the possible major subjects are as follows:

Master programme for Forestry, with a major in silviculture, peatland forestry, forestry biology, forest tree breeding, forest pathology, forest zoology, forest mensuration and management, forest policy, land use economics, forest technology, wood technology, or business economics of forestry.

Master programme for Marketing of Forest Products with a major in forest products marketing and/or wood technology. There are options for marketing forest industry products and

trade of wood raw materials, for marketing forestry machinery and trade of wood raw materials, for international forest industry, and for international forestry.

The programme in Forestry is a qualification intended for those who undertake the traditional tasks of forestry. The programme in Marketing of Forest Products prepares experts for the practical and managerial aspects of trade in forest products and in machines to be used in various forestry operations.

The undergraduate course takes more than four years and comprises lectures and practical training.

Practical training is of great importance. It mainly takes place in the summer, partly as joint training arranged by the University and partly as special training which is arranged in companies, organizations, and the National Board of Forestry.

Learning peatland forestry in practice.



The number of students accepted for the master programmes is limited. At the present time a total of 70 new students are admitted yearly, 20 of them to Marketing of Forest Products. In recent years the number of applications received has well exceeded the number of student places.

A holder of the Master's degree, or the previous degree of B. Sc. in Agriculture and Forestry, may continue to study for the Licentiate's or Doctor's degree. For a Doctor's degree a student must publicly defend a printed doctoral dissertation.

POST-GRADUATE STUDIES

Post-graduate studies are principally intended for the training of research workers, although, to an increasing degree, they are also considered as additional qualifications for advancement to senior posts.

The Licentiate course provides a thorough knowledge of a main subject in the Faculty. In order to demonstrate his ability to use scientific research methods, student must present a licentiate thesis. The thesis is often the result of research work lasting about two years. The thesis is examined in a special licentiate seminar by a committee consisting of three members appointed by the Faculty.

In order to achieve the degree of Doctor of Science in Agriculture and Forestry a candidate must obtain a more thorough knowledge of his major subject. In addition, he has to prepare a dissertation which will be officially examined and, on the recommendation of the opponent or opponents, accepted by the Faculty. Recently, it has become increasingly common for the thesis undertaken in partial fulfilment of the degree of licentiate to be expanded into a doctor's dissertation.

RESEARCH

The University's annual budget does not provide much funds for research. Research at the University is therefore financed from other sources, mainly the National Research Council for Agriculture and Forestry. Forestry research is also sponsored by certain foundations, especially the Foundation for Research of Natural Resources in Finland and the Finnish Cultural Foundation.

One result of the lack of sufficient continuity in financing research programs is that professors, lecturers and assistants of the University give preference to theoretical and methodological research. Programs requiring long-term experiments are performed mainly by the Finnish Forest Research Institute.

UNIVERSITY OF JOENSUU

FACULTY OF FORESTRY, UNIVERSITY OF JOENSUU
Joensuun yliopiston metsätieteellinen tiedekunta

| | |
|-----------------|---|
| Address: | P.O. Box 111 SF-80101 Joensuu Finland |
| Street address: | Yliopistokatu 7 |
| Telephone: | +358 73 1511 |
| Telex: | 46183 joy sf |
| Telefax: | +358 73 151 2050 |
| Established: | 1982 |
| Staff: | 25 |
| Students: | approx. 190, 35 new students accepted annually |
| Publications: | Silva Carelica (monographs) |
| Dean: | Paavo Pelkonen, prof. |

STRUCTURE OF STUDIES IN FORESTRY

Instruction is given at the Faculty of Forestry and at the Mekrijärvi Research Station in Ilomantsi.

The disciplines available at the Faculty of Forestry are:

- Forest Soil Science
- Silviculture
- Forest Production
- Forest Management Planning
- Forest Technology
- Forest Economics
- Forest Protection
- Forest Mensuration

The first five can be taken as a major subject. The study area of the different majors is as follows.

Forest Soil Science studies the formation and structure of the forest soil including the biological, chemical and physical properties of the forest soil. Water resource engineering and management of the forest soil by various treatments are practical applications of Forest Soil Science.

Silviculture studies the biological basis of the silvicultural engineering of the forest ecosystem and the multiple use of the forest resources. A special emphasis is placed on the theory and practice of natural and artificial regeneration of forests and the management of seedling and thinning stands.

Forest Production investigates the growth processes and the resultant yield of trees growing on sites of varying fertility. Forest production also includes the production of wood and peat for energy, and training students for solving special problems of forest production in developing countries.

Forest Management Planning studies the theory and practice of the measuring and inventory methods needed in estimating the quantity and quality of forest resources. A special emphasis is given to developing methods of forecasting the future development of the forest resources as a basis of the decision-making in forestry.

Forest Technology studies working methods and machinery in silviculture, timber harvesting and transport and related administrative and economic functions, mainly from the point of view of planning and optimization of wood procurement. The study area also includes wood technology, the subject of which is structure and properties of different tree species, plus wood processing and products.

COURSE OF STUDY IN FORESTRY

The curriculum in Forestry covers 160 study weeks, one study week being equal to 40 hours' work. The completion of the Master of Science in Forestry takes four to five years. The studies proceed from basic sciences to practical applications and scientific research in forestry, the study programme being divided into General Studies, Professional Studies and Scientific Studies.

General Studies contains the basic sciences needed in forestry and forest research. Professional Studies involves the theory and practice of different forest disciplines. In Scientific Studies the main emphasis is on the special problems of the selected major and in the methods of scientific research.

The study programmes for post-graduate studies have also been drafted. The degrees of Licentiate and Doctor in Agriculture and Forestry can be achieved in two to four years.

ADDITIONAL INFORMATION

These booklets are currently available:

- Forest Sciences at the University of Joensuu
- University of Joensuu Research Catalogue
- University of Joensuu, Finland (general information)

THE FINNISH FOREST RESEARCH INSTITUTE

THE FINNISH FOREST RESEARCH INSTITUTE
Metsäntutkimuslaitos

| | |
|-------------------------------------|---|
| Address: | Unioninkatu 40 A SF-00170 Helsinki Finland |
| Telephone: | +358 0 661 401 |
| Telex: | 121286 metla sf |
| Telefax: | +358 0 625 308 |
| Established: | 1917 |
| Staff: | 800 |
| Status: | Public research institution subordinated to the Ministry of Agriculture and Forestry |
| Publications: | Acta Forestalia Fennica Folia Forestalia Metsäntutkimuslaitoksen tiedonantoja |
| Chief officers: | Eljas Pohtila, prof., Director General Jari Parviainen, prof., Research Director Tero Oksa, Administrative Director |
| General information available from: | Ms. Marja Ruutu, Head of Information Office |

The Finnish Forest Research Institute is Finland's central forest research organisation. Its central unit is located in the Helsinki area. Research stations and research areas are located in various parts of Finland. One quarter of the permanent staff are researchers. Over half of the staff are employed in the regional units.

RESEARCH AND SERVICE DUTIES

The main duties of the Finnish Forest Research Institute are:

- to carry out research in order to promote forestry and the uses of forests in Finland
- to monitor the state of the forests from the environmental standpoint, and to develop methods of preventing forest damage

Aside from actual research, the Institute is also charged with national data service duties. The most important of these are:

- the national forest inventory
- compilation of forest statistics
- calculation of forest taxation bases and costs of silvicultural work
- data system for monitoring the wood product market
- pesticide control
- maintenance of registers of tree breeding and regeneration material.

ORGANISATION

The Institute comprises nine research departments, an administration department and eight research stations.

Research departments

The Department of Soil Science studies the characteristics of mineral soils, the classification of forest sites, and ways to increase tree growth through soil improvement.

The Department of Peatland Forestry studies the characteristics, classification and hydrology of peatlands, drainage and improvement of peat soil fertility, and the management of peatland forests.

The Department of Silviculture studies natural regeneration on mineral soils, the seed crops of forest trees, raising of seedlings, artificial regeneration, forest ecology and silvicultural methods, and the physiology of forest trees.

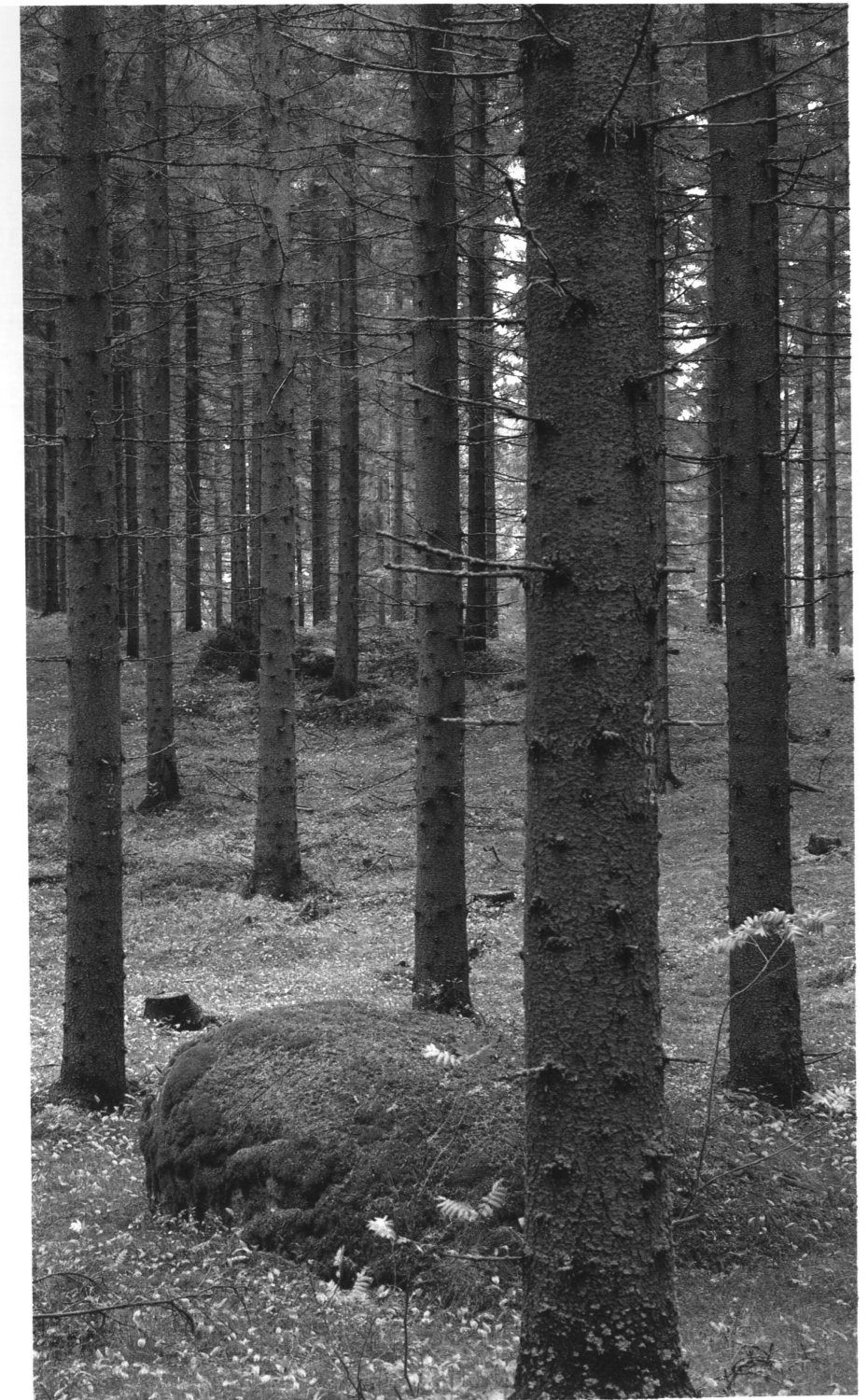
The Department of Forest Genetics studies the inheritance of forest tree characteristics, the genetic structure of forests, and tree breeding methods. The department also breeds forest trees and maintains a national register of regeneration material.

The Department of Forest Protection studies insects and animals harmful to forestry, the damage caused by them, and ways of controlling them. The department also studies diseases of forest trees, damage caused to forests by abiotic agencies, and the use of forest mushrooms, and tests pesticides used in forestry.

The Department of Forest Inventory and Yield is responsible for the national forest inventory. The department studies and develops methods of forest mensuration and management. It also investigates tree structure, growth and yield of forests, and the effect of different stand regimes on these.

The Department of Forest Technology studies and develops harvesting and silvicultural operations, ergonomics of forest work, and wage systems. This department also studies the structure, characteristics and quality of wood, wood as a raw material, and roundwood measurement.

The Department of Forest Economics studies national economic and sociological matters applying to forestry, the forest industry and the multiple use of forests, wood consumption and



Norway spruce
thinning trial.

timber balance, business economics of forestry and wood economics, and forest product markets.

The Department of Mathematics studies and develops mathematical research methods, maintains the Institute's ADP system, trains and assists staff in the use of methods and systems, and compiles forest statistics.

Research stations

The task of the Institute's eight research stations is regional and national research. The research stations also take care of information exchange between practical forestry and the Institute by arranging trips and seminars. About a half of the Institute's total staff and one-third of its researchers are employed at research stations.



Research forests

The Institute has some 140.000 hectares of state forests at its disposal. The network of 17 research areas covers the entire country. The total area of commercially managed research forests amounts to 80.000 hectares; on these there are 20.000 experiment plots.

The Institute's research forests also include 60.000 hectares in areas set aside for nature conservation purposes. These areas also serve the needs of research.

PUBLISHING

Research results from the Finnish Forest Research Institute are published in three series of journals:

Acta Forestalia Fennica, published jointly with the Society of Forestry in Finland, contains mainly research articles, e.g. theses, intended for scientists. The series was started by the Society in 1913. It has been a major channel for the Institute's work since January 1989, when Communicationes Instituti Forestalis Fennicae was merged with it.

Folia Forestalia, established in 1963, publishes research articles and interim reports on longer term studies intended mainly for those engaged in the practical side of forestry.

The Metsäntutkimuslaitoksen tiedonantoja journal was established in 1981. In it preliminary study results, condensed reports and seminar papers are published.

AVAILABLE INFORMATION

- The Finnish Forest Research Institute. Also in Swedish, German, French, Spanish and Russian
- Who Is Who at the Finnish Forest Research Institute
- Abstracts of publications of the Finnish Forest Research Institute. Published yearly in Folia Forestalia
- Aulanko Park Forest. Also in Swedish
- Pallas-Ounas National Park. Also in Swedish and German
- Punkaharju Nature Trail. Also in Swedish and German
- Pyhäntunturi National Park. Also in Swedish and German

THE FOUNDATION FOR FOREST TREE BREEDING IN FINLAND

THE FOUNDATION FOR FOREST TREE BREEDING IN FINLAND
Metsänjalostussäätiö

Address: Viljatie 4 A 5
SF-00700 Helsinki
Finland

Telephone: +358 0 359 022

Telefax: +358 0 359 720

Established: 1947

Staff: 65

Status: Private organization carrying on practical tree breeding, genetic research, development work and commercial plant production. With the exception of plant production, the activities are mainly financed by the state

Publications: Metsänjalostussäätiö (annual report with English summaries)
Information leaflets

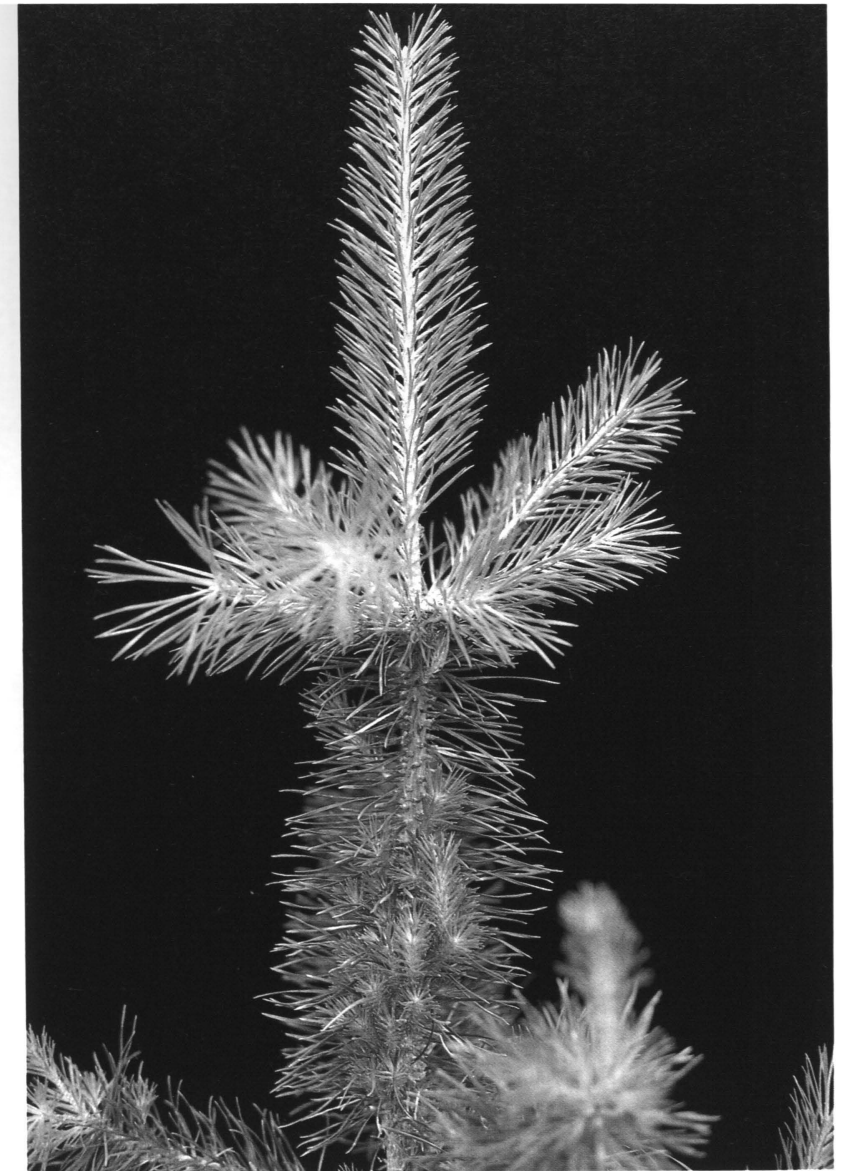
Chief officers: Mr. Antti Isoaho, Managing Director
Mr. Jouni Mikola, Head of Breeding Department
Mr. Martti Lepistö, Head of Experimental Department
Mr. Pentti Tyystjärvi, Head of Production Department

Haapastensyrjä Tree Breeding Centre:
Address: 12600 Läyliäinen
Telephone: +358 14 43 260
Telefax: +358 14 43 030

The Foundation for Forest Tree Breeding is a development organization, whose main objective is practical tree breeding. The Foundation also carries on seedling production, accounting for some 6 per cent of all forest tree seedlings produced in Finland.

While the Foundation serves the whole country, most operations are based in the southern half of Finland. The head office is in Helsinki. Practical breeding work mainly takes place at the tree breeding centre at Haapastensyrjä, 65 km north of Helsinki. Several plantations for testing the breeding stock have been set up at various locations in southern and central Finland. The

Cytokinin spraying encourages formation of axillary buds on dwarf shoots. Buds are then detached and grown as independent plants.



nurseries at Rökkä, southern Finland, and at Keuruu and Pieksämäki, central Finland, produce seedlings for reforestation.

The Foundation is divided in three departments. The Breeding Department and the Experimental Department receive all their funding from the state. The Production Department, on the other hand, is self-financed.

In the Foundation's work, priority is given to the main indigenous species, Scots pine, Norway spruce and birch (*Betula pendula*). The work on pine focuses on testing the breeding

values of plus trees and on creating a second breeding generation based on controlled crosses.

Spruce breeding takes a special interest in the use of geographical variation and hybridization, propagation by cuttings, and ways to enhance flowering.

With birch, selection and crossing have advanced faster than with conifers; some of the present work deals with a second or third breeding generation. A good share of the birch seed needed for reforestation comes from seed orchards in plastic greenhouses.

Apart from the long-term programmes on the main species, a number of separate projects are carried on

Seed orchard development

- thinning and roguing of seed orchards
- pruning and tending of grafts
- planning and establishment of new seed orchards

Improvement of regeneration stock for northern Finland

- control and improvement of the genetic quality of material produced in southward-transferred seed orchards of northern trees

Crop tree breeding

- formulation of a crop tree ideotype, and development of high-yielding cultivars using genetically narrow-crowned trees as basic material

Micropropagation of conifers

- development of methods for micropropagation of Scots pine, lodgepole pine and Norway spruce using buds or shoots produced by cytokinin spraying as starting material

AVAILABLE INFORMATION

- The Foundation for Forest Tree Breeding, pocket-sized brochure
- Annual Report, with summary and figure legends in English
- information leaflets

METSÄTEHO

METSÄTEHO, THE FOREST WORK STUDY SECTION OF THE CENTRAL ASSOCIATION OF FINNISH FOREST INDUSTRIES
Metsäteho, Suomen Metsäteollisuuden Keskusliitto ry:n metsätyöntutkimus-osasto

| | |
|-------------------------------------|---|
| Address: | P.O. Box 194 SF-00131 Helsinki Finland |
| Street address: | Fabianinkatu 9 B |
| Telephone: | +358 0 658 922 |
| Established: | 1945 |
| Staff: | 36 |
| Status: | Private research institute financed by the Finnish forest industry and the National Board of Forestry |
| Publications: | Metsätehon tiedotus (Metsäteho Report) Metsätehon katsaus (Metsäteho Review) |
| Chief officer: | Hannu Valtanen, Managing Director |
| General information available from: | Sture Lampen, Information Officer |

The function of Metsäteho is to provide services that develop and make more effective the logging and production of wood raw material. This it does through investigations and experiments and by disseminating information.

Its membership consists of 30 forest industry and wood procurement companies that belong to the Central Association of Finnish Forest Industries. With the National Board of Forestry there is a cooperation agreement. The work is financed chiefly through membership fees. The membership fee is fixed on the basis of the quantity of timber logged by each member. Metsäteho's activities are managed and supervised by an 8-member Board of Directors elected yearly by the Central Association of Finnish Forest Industries.

In order to maintain close cooperation between the members and Metsäteho, permanent expert committees formed of representatives of the members have been established. The committees help in directing Metsäteho's activities along the lines of practical requirements. In addition to the permanent committees, supporting field-expert groups are set up, when needed, for different research projects.



The staff comprises the Managing Director, three section heads and 16 research and information officers. The total number of the staff is 36. Studies associated with the wage bases of cutting, forest haulage and the long-distance transportation of timber have been on Metsäteho's programme from its inception and still continue. Metsäteho's studies constitute the bases of the currently applied wages and tariffs for the cutting, haulage and transportation of timber by truck.

The number of studies aimed at the development of forest operations has increased steadily. The main emphasis in research and experimental activity today is on investigating the suitability of new methods and machines and on laying a foundation for the development of new methods and machines. A significant feature of the programme is the development of and experimentation with planning methods aimed at minimising wood procurement costs and control methods for the effective use of machines and employees. The studies cover the whole harvesting process from stump to mill. Since 1971, the programme has also included studies on the mechanization and wage bases of silvicultural work and the dissemination of information about them.

The studies and experiments are conducted on actual work sites in close cooperation with the members. In activities aimed at the development of machines, close cooperation exists with their manufacturers. Metsäteho has close contacts with other domestic and foreign research institutions, especially in Scandinavia. Nordic cooperation comprises joint research projects, in addition to the exchange of information.

THE WORK EFFICIENCY INSTITUTE

THE WORK EFFICIENCY INSTITUTE
Työtehoseura

Address: Melkonkatu 17 A
SF-00210 Helsinki
Finland

Telephone: +358 0 692 2445

Telefax: +358 0 692 2084

Established: 1924

Staff: 170

Status: Private, state-subsidized rationalization institute for agriculture, forestry, home economics and related fields

Publications: Work Efficiency Institute Publications
Work Efficiency Institute Bulletins
Teho magazine

Chief officers: Erkki H. Oksanen, prof., Director
Jouko Mäkelä, D. For., Head of the Forestry department
Paavo Haataja, Head of the Forest Experiment Station

General information available from: Ms. Tuulikki Fahler, Head of the Information Office

The forestry sector of the Work Efficiency Institute (WEI) consists of the Forestry Department in Helsinki and at Rajamäki (fifty kilometres north of Helsinki) and of the Forest Experiment Station at Rajamäki. The Forestry Department is responsible for research and information, and the Forest Experiment Station for machine development.

The research activities of the Forestry Department focus on forest work carried out by private forest owners themselves. The research program can be divided into technological, ergonomical and economic studies. In addition, utilization of fuel wood and peat on farms and in private homes has an important part in research activities.

The Forest Experiment Station is involved in the development, design and construction of forest machines. Foremost among these are the TTS soil preparation machines for forestry use. They have been used in several European countries and in North America.

Results of research are published in WEI's publication series, forestry bulletins and TEHO magazine with English summaries.



TECHNICAL RESEARCH CENTRE OF FINLAND

TECHNICAL RESEARCH CENTRE OF FINLAND, FOREST PRODUCTS LABORATORY
Valtion teknillinen tutkimuskeskus, puulaboratorio

Address: Puumiehenkuja 2 A
SF-02150 Espoo
FINLAND

Telephone: +358 0 4561

Telex: 122972 vttha sf

Telefax: +358 0 467 607

Established: 1942

Staff: 84

Status: Laboratory of a state research institute subordinated to the Ministry of Trade and Industry

Publications: Technical Research Centre of Finland, Research Reports and Research Notes
Valtion teknillinen tutkimuskeskus, Tutkimuksia ja Tiedotteita

Chief officers: Tuija Vihavainen, prof., Laboratory Director
Urho Saarelainen, M.Sc.(Tech.), Deputy Director
Arto Usenius, D.Tech., Research Professor
Pertti Viitaniemi, D.Tech., Acting Research Professor

General information available from: Ms. Sari Halme, Laboratory Secretary

The Forest Products Laboratory is one of the 34 research laboratories of the Technical Research Centre of Finland (VTT). The purpose of the laboratory is to promote the development of the production of Finland's forest products industry and the use of wood products by using and creating technological knowledge.

The Laboratory is divided into the following sections:

- administrative section
- manufacturing processes
- panel products
- wood preservation and gluing
- wood constructions.

The research activities of the Laboratory cover wood material technology, manufacturing technology of wood products and timber construction technology. About one third of the research work is financed by the state and two thirds are commissioned by the industry. The Laboratory conducts also testing, aiding the product development of the industry, and inspection and quality control of different wood products.

The Laboratory building in Espoo has about 5000 m² floor area and includes facilities for manufacturing of wood products and testing of wood and wooden constructions.

AVAILABLE INFORMATION

Information on the Laboratory and its research work is available in information bulletins of the VTT and the Laboratory, Annual Reports, VTT Research Reports and Research Notes, and in Forest Products Laboratory Research News.



Climate test chamber is used parallel with tests outside to determine weather resistance of materials.

THE FINNISH PULP AND PAPER RESEARCH INSTITUTE

THE FINNISH PULP AND PAPER RESEARCH INSTITUTE
Oy Keskuslaboratorio — Centrallaboratorium Ab

Address: Tekniikantie 2, Otaniemi, Espoo
Street address: P.O.Box 136, SF-00101 Helsinki, Finland
Telephone: +358 0 43711
Teletex: 1001522 KCL sf
Telefax: +358 0 464305
Established: 1916
Staff: 300
Status: Central research institute for the Finnish paper industry; a joint-stock company
Publications: Annual report
Communications from the Finnish Pulp and Paper Research Institute
Chief officers: Bo Mannström, D. Tech., President
Ilpo Palenius, M.Sc., Executive Vice President, pulping
Jan-Erik Levlin, M. Sc., Vice President, technical service
Ilkka Kartovaara, M.Sc. (Tech.), Vice President, paper converting
Hannu Paulapuro, D. Tech., Vice President, paper and board
General information available from: Adele Linnamo, M. Sc.(Tech.), Information Manager

The Finnish Pulp and Paper Research Institute is the central research institute for the Finnish paper industry. The Institute carries out:

- joint technical R & D work required by the paper industry
- goal-oriented basic research to serve the needs of joint technical R & D and to test new ideas
- contract research for Finnish paper industry companies
- contract research for other Finnish and foreign companies, consultants, international organizations, etc.

A technical and scientific information service is provided for

Pilot plant paper coating machine.



member companies and others interested in the technology of the paper industry.

The Institute is mainly financed by the pulp and paper industry. The Finnish Government is also involved in financing certain research projects.

RESEARCH PROGRAMME

Half of the research programme consists of joint technical research and development work serving the common interests of the Finnish pulp and paper industry.

The objective is to provide the industry with the technical and scientific information it needs for optimizing forest exploitation from wood raw material through manufacturing processes to finished products. Aspects of environmental protection and

energy consumption are considered in all process and product development work.

The properties of printing papers and the coating of paper and board are important areas of study. Special attention is given to the expertise needed in using and converting paper products in the end users' processes.

A quarter of the research capacity is reserved for goal-oriented basic research, and the remaining 25 % consists of contract research.

COLLABORATION WITH INDUSTRY

Annual research programmes and long-range plans for research are drawn up together with the industry, which is also informed of the results.

LABORATORIES AND PILOT PLANT

The Institute has fully equipped laboratories for testing pulp, paper, paperboard and packages. Equipment for chemical and physical analyses includes IR, UV, NMR, gamma and beta spectrometers, chromatographs, atomic absorption spectrometers and mass spectrometers, and a GC-MS-MS system for analyzing dioxines. The Institute also has a scanning electron microscope and image analyzer.

The technical resources available both for the Institute's own research and for contract work include a pilot plant covering all the major unit processes for producing mechanical pulps, paper and board, coating of paper and board, calendering and semi-commercial printing.

AVAILABLE INFORMATION

- Brochure in English
- Annual Report
- Communications from the Finnish Pulp and Paper Research Institute (reprint series)

THE SOCIETY OF FORESTRY IN FINLAND

THE SOCIETY OF FORESTRY IN FINLAND
Suomen Metsätieteellinen Seura r.y.

| | |
|-----------------|--|
| Address: | Unioninkatu 40 B SF-00170 Helsinki Finland |
| Telephone | +358 0 658 707 |
| Telex: | 125181 hyfor sf attn: sms |
| Established: | 1909 |
| Status: | Scientific society receiving financial support from the Academy of Finland |
| Members: | app. 500 |
| Publications: | Acta Forestalia Fennica (monographs) Silva Fennica (quarterly journal) |
| Correspondence: | Secretary, Dr. Markku Kanninen |

ACTIVITIES

- The Society seeks to attain its objectives principally by
- issuing and exchanging publications
 - holding meetings
 - granting financial support for young researchers
 - taking part in international activities

Publishing is probably the most important function of the Society. The Society started to publish Acta Forestalia Fennica in 1913 and Silva Fennica in 1926. By the end of 1988 a total of 203 volumes of Acta Forestalia Fennica had been published containing more than 600 separate studies. Since January 1989, the series is published jointly with the Finnish Forest Research Institute. In Silva Fennica, since 1967 a quarterly journal, 120+22 volumes had been published.

Over 500 scientific journals and series arrive each year at the Society's library as a result of exchange agreements with foreign institutions. The library of the Society, situated in connection with the Forestry Library of the University of Helsinki, is open to all interested parties.

The Society's meetings are usually held once a month from

September to May, and consist in scientific lectures and discussions.

In addition to the exchange of publications, the Society takes part in international activities in forestry research by inviting foreign scientists to address its meetings. The Society is one of the Finnish members of IUFRO.

ADMINISTRATION

The administration of the Society is carried out by a Council consisting of five members: president, vice-president, and three other members elected by the annual meeting.

ADDITIONAL INFORMATION

Holopainen, Viljo. 1984. Outlines of Finland's forestry and forest policy. The Society of Forestry in Finland, Helsinki. 57 pp.

Oja, Seppo. 1984. Publications of the Society of Forestry in Finland, 1973—1984. Silva Fennica 18(4): 447—497.

The Society of Forestry in Finland 70 years. Acta Forestalia Fennica 190 (1984).

Requests for further information or publications should be addressed to the Secretary of the Society.



THE RESEARCH COUNCIL FOR AGRICULTURE AND FORESTRY

THE RESEARCH COUNCIL FOR AGRICULTURE AND FORESTRY
Maatalous-metsätieteellinen toimikunta

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|-----------------|--|
| Address: | Hämeentie 68 B SF-00550 Helsinki Finland |
| Telephone: | +358 0 77581 |
| Telex: | 123416 acad sf |
| Established: | 1969 |
| Staff: | 3 |
| Status: | Research-funding and policy-planning organization under the Ministry of Education |
| Correspondence: | Ms. Mirja Suurnäkki, Secretary |

The Academy of Finland was established in its present form in 1969 by the Law concerning the Organizations of Scientific Research. In its capacity as the central governmental organ for research administration in Finland it consists of the Central Board of Science, seven Research Councils and the Administrative Office. The Academy of Finland is subordinated to the Ministry of Education.

The National Research Council for Agriculture and Forestry, being one of the seven Research Councils of the Academy, has the following duties:

- to promote research in the fields of agriculture, forestry, home economics, food science and other connected disciplines
- to distribute grants and make contracts for long term research projects
- to act as an expert body for government officials
- to promote cooperation in different fields of research and between research councils and institutes.

The Council employs research workers: senior and junior fellows and research assistants, appointing them for a period of one to three years. The younger fellows are allowed to hold a position for a maximum of seven years and the assistants for six years. The posts of research assistants are mainly intended to serve as starting points to those who have passed an academic examination and would like to proceed in their scientific career to

the doctor's degree. The number of research employees in 1988 was 43. Sixteen of the research officers were working in the field of forestry.

The Council has no laboratories or institutes. Its researchers carry out their work either in research institutes or in universities. The grants distributed by the Council are intended for the employment of assistants to research staff, for equipment, travel expenses etc. A certain amount of money is granted annually from the State Budget for this purpose. The State's financial support to scientific societies is also distributed through the Council.

The members of the Council are appointed by the Government from among the specialists in relevant fields for a period of three years. The chairman of the Council is appointed by the President of the Republic. The present National Research Council for Agriculture and Forestry consists of the chairman and fourteen members, who have been appointed for the period 1989—1991.

FOUNDATION FOR RESEARCH OF NATURAL RESOURCES IN FINLAND

FOUNDATION FOR RESEARCH OF NATURAL RESOURCES IN FINLAND
Suomen Luonnonvarain Tutkimussäätiö

Address: Salomonkatu 17A
SF-00100 Helsinki
Finland

Telephone: +358 0 694 2762

Established: 1952

Status: Non-governmental research foundation

Activities: Financing of research projects

Correspondence: Research Manager, Dr. Markku Kanninen

ACTIVITIES

The Foundation for Research of Natural Resources in Finland fulfils its mandate by distributing grants for research work. The research projects usually involve extensive cooperation between researchers, various research organizations and the Foundation. In addition, the Foundation organizes scientific symposia, seminars and meetings in order to promote mutual communication between researchers in Finland and abroad. The Foundation is one of the Finnish members of IUFRO.

In the recent years, two thirds of the grants have been allotted to research in forestry and wood science. The rest has been divided among three main sectors, each receiving about 10 % of the total sum. These three sectors are geology and mining, hydrology and fishing, and topics associated with other natural resources, e.g. game, berries, mushrooms etc.

ADMINISTRATION

The board of The Foundation for Research of Natural Resources in Finland is composed of representatives of eleven organizations and institutes. These background organizations are: the University of Helsinki, Technical University of Helsinki, the Finnish Forest Research Institute, the Technical Research Centre of Finland, the Society of Forestry in Finland, the Association of

Mining and Metallurgical Engineers, Central Forestry Board
Tapio, Forestry Council of the Central Union of Agricultural
Producers, the Central Association of Finnish Forest Industries,
Confederation of Finnish Industries, and the Association of
Finnish Coal Importers.

Requests for further information or publications should be ad-
dressed to the research manager of the Foundation.

