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SIXTY YEARS OF RESEARCH AND DEVELOPMENT OF FORESTRY SCIENTIFIC-RESEARCH INSTITUTIONS IN CROATIA

INTRODUCTION

The 60th anniversary of research and development of forestry scientific-research institutions (1945-2005) occurred in the year when Croatian forestry celebrated other very significant events: the 250th anniversary of the founding of the first forest offices in Croatia, in Krasno, Baške Oštarije and Petrova gora (1765-2005) and the 145th anniversary of forestry teaching in Croatia (1860-2005), while in 2003 the 125th anniversary was recorded of the founding of the Royal Supervision for Afforestation of the Karst in the Region of the Croatian Military Border.

During the past sixty years of activity research institutions in Croatian forestry frequently changed their organisation, name and headquarters, although basic objectives remained the same: development of forestry sciences and deepening of scientific knowledge in forestry, close connection with forestry operative units in the application of research results in view of improved advancement of management, protection, reforestation and biological diversity of our forests, care for the development and further education of young scientists and research workers, improved cooperation with domestic and foreign institutions and associations, increased investments in facilities and acquisition of new scientific equipment in, improvement in publication activities, etc.

Forestry policy and scientific-research work in the European Union require changes in forestry and scientific-research work. Federal and scientific institutes in Europe perform very similar work and assignments; scientific-research work, long-term monitoring and observations (EUFORGEN, ICP Forests), transfer and application of research results in practice, consulting, maintained management of forests, public relations, etc. Merging of public (state-owned) institutes at the national and international level, horizontally and vertically, is the only possible method of existence. In many European countries (Germany, Denmark, Slovakia, Czechs Republic, Finland, Sweden, Switzerland) fundamental changes in the organisation of public institutes have been completed, or are in progress, due to the drastic decrease in funds for financing research work. New conditions of general globalisation demand changes in the methods of running forestry science-research

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organisations. There is a feeling of crisis relating to research work and the role of forestry in economy. However, experience has shown that existing public institutes can take over assignments on the condition that their programmes of *basic silviculture* include economy, social sciences, marketing, preservation of the environment and public relations (Gračan 2005).

The new Law on Scientific-Research Activity and Higher Education, passed in 2003, and amended in December 2003 and July 2004, legalised the application of the Bologna Process in Croatia. Introduction of new study programmes and new organisation of higher education has been practised since the academic year 2005/2006.

The consequences of a tragic accident on the road Knin-Gračac, on 10th February 1998, in which 5 scientists from the Forest Research Institute were killed (Nikola Komlenović, PhD.; Branimir Mayer, PhD.; Petar Rastovski, PhD.; Zlatko Perić, MSc.; Goran Bušić, MSc.), and one scientist from the Faculty of Forestry, Zagreb, Prof. Ante Krstinić, are still felt at the Forest Research Institute, Jastrebarsko. This tragic event deeply shocked the whole of the community of Croatian science, higher education and forestry practice. We lost prominent scientists, who were promoters of forestry science and practice, as well as the truth about Croatia prior to, during and after the Homeland War.

Celebrating the 60th anniversary of the Forest Research Institute, Jastrebarsko, provides an opportunity to express our gratitude and to pay tribute

to our forestry profession and practice, and the numerous state and public institutions for their continued successful cooperation, care for the development of scientific-research institutions and help in the further education of cadre.

The academician, Slavko Matić, in the Introduction of the Monograph emphasised: "The Forest Research Institute, Jastrebarsko, today represents a modern institute, equipped with buildings, laboratories, modern equipment, tree nurseries and many other field facilities. Most important of all is that it employs relatively numerous and predominantly young, highly qualified scientists, who are the guarantee of its existence, future and quality of work".

It is our wish that this Institute in all respects permanently monitors the development of the forests, which they professionally raise and tend, and in the same way we hope that the Institute will last for ever, like our immortal Croatian forests (Matić 2005). Our gratitude goes to academician Slavko Matić on behalf of all employees of the Forest Research Institute, Jastrebarsko.

FOUNDING AND DEVELOPMENT OF FORESTRY SCIENTIFIC-RESEARCH INSTITUTIONS (1945-1973)

The first scientific investigation in Croatian forestry started in 1860, when the Agriculture and Forestry College was founded in Križevci. Organised scientific-research work started in 1898 with the establishment of the Forestry Academy in Zagreb. More intensive scientific-research work commenced with the founding of the Agricultural-Forestry Faculty in Zagreb, 1918. While the first institutions for forestry experiments in Europe were founded as early as 1870, in Croatia the first Institute for Forestry Experiments was established in the Department of Silviculture within the Agricultural-Forestry Faculty, on 24th March 1921.

Following the end of World War II (1945) the Ministry of Agriculture and Forestry - Forestry of the Government of the Croatian Republic, started to organise the forestry service and research work. By a Decree of the Ministry of Agriculture and Forestry of the 8th June 1945, Zlatko Vajda, B. Sc. (Forestry) was appointed a V. class officer in the Department of Practical Forestry Research. This is the earliest document from which the establishment of research institutions can be seen. Josip Šafar, B. Sc. (Forestry) was appointed Director of the Department of Practical Forestry Research in a Ruling by the Ministry of Agriculture and Forestry of Croatia of 14th December 1945. From the end of 1945 in some documents the Department was also called the Institute of Practical Forestry Research, which functioned within the framework of the Ministry of Agriculture and Forestry since its foundation up until 1946. From 1946 to 1950 the name was changed to the Institute of Forestry Research, whose founder was the Ministry of Agriculture and Forestry. The Central Administration for Forestry of NR Croatia in 1950 was the new founder and changed the name to the Institute of Forestry and Wildlife Research. The Institute was financed from the Zagreb budget of the Ministry of Agriculture and Forestry from 1st June 1953 up until 1st June 1954,

after which it became an independently financed institution, whose founder was the Executive Council of NR Croatia - Secretariat for Forestry. By a decision of the University in Zagreb of 1962 the Institute became a part of the Faculty of Forestry in Zagreb and changed its name to the Institute of Forestry Research. It worked under this name up until 1968, after which it again changed its name to the *Institute of Forestry Research of SR Croatia*. During 1947 the *Institute for Afforestation of the Karst in Split* was founded with stations in Rijeka and Trsteno. In 1950 the Institute of Experimental Forestry, of the former JAZU (Yugoslav Academy of Sciences and Arts), was founded in Zagreb, and it took over certain activities of the Institute for Afforestation and Land Improvement of the Karst. In 1957 some members of this Institute took charge of the Institute of Forestry and Wildlife Research.

On the 28th August 1959 the Agricultural Forestry Chamber of NR Croatia founded the *Department for the Control of Forest Seed* in Rijeka, Director Boris Regent, B.Sc. (Forestry), and on the 11th June 1960 the *Department for Conifers* in Jastrebarsko, which changed its name in 1964 to the Yugoslav Institute for Conifers, Director Ante Lovrić, BSc. (Forestry).

These three scientific institutions, which preceded the founding of today's Forest Research Institute, Jastrebarsko, experienced great difficulties and problems from their founding to unification. The period from 1945 to the end of 1973 can be divided into three periods:

First period - From the end of the Second World War up until 1950 involved the foundation and formation of scientific-research institutions and mainly concerned the Forest Research Institute. This period was characterised by a lack of expert staff and financial means. At that time in the Institute experienced experts prior to retirement were employed. In practice it was a period of great fellings, because of renovation and industrialisation. Experts in the Institute solved current problems in operative units and gave a significant contribution to the development of post-war forestry.

Because of the great number of practical tasks, unsolved financing, and partial inexperience in scientific work, it was not easy to produce and propose a plan and programme of work for the Institute, and to achieve personal improvement and advancement.

However, in that period 22 books were published, of which we list only the most important: Forestry Handbook I and II (J. Šafar), Effect of Climatic fluctuations on Dieback of Peduncled Oak (Z. Vajda), Selection Forests and Selection Management (J. Šafar), Cultivation of Poplars (I. Podhorski), Tending of the Forest (I. Lončar), Forest Communities of Yugoslavia (A. Horvat), etc.

Second period - From 1951 to around 1960 new problems occurred: tending of the forest, expansion of the areas of conifer distribution, more intensive production, etc. In this period the financing of scientific institutions was to a certain extent settled, and slowly acquired its physiognomy. Young staff were employed - assistants, and programmes of long-term research were produced, which were financed by the Republic and Federal Fund for Scientific Work and Forestry Oper-

ative Units. Priority was given to the tending of stands, cultivation of poplars, introduction and expansion of the distribution of conifers, land improvement of degraded forests, biology and breeding of game, and phytocoenological investigations and mapping. In this period nine forest experimental stations were established: Darda, Vinkovci, Osijek, Požega, Bjelovar (Križevci), Petrinja (Sisak), Delnice, Rijeka and Split.

Third period - This was the period from 1961 to 1974. The Republic Fund for Scientific Work and the Fund for Advancement of Forestry ceased to finance research work. The Republic Fund, Business Association of Forest Economic Organisations and Operative Units (forest management units) took over the financing of research in Croatian forestry through direct agreements. The Fund for Scientific Work and Operative Units through the Business Association of Forest Economic Organisations decided directly on the production and acceptance of mid-term plans for research and determination of assignments of interest for forestry. Projects and assignments were more complex and involved overall problems in forestry. The following were investigated: biological cultivating properties of forest trees, forest protection, soil, vegetation, improvement of forest seed husbandry and nursery production, zoning of seed areas and stand units, expansion of the area of conifer distribution, forest tending, mechanisation in forestry, physiology and nutrition, genetics and breeding of forest trees, forest types and rationalisation of work. In this period all the experimental stations ceased work. Study of the cultivation of poplars was taken over by the Institute of Poplars, Novi Sad, and the former Yugoslav Institute of Conifers extended the range of conifers by establishing forest cultures, plantations and clonal seed plantations of fast growing domestic and foreign conifers. These investigations were financed directly and by financial credits of the Federal Fund for Advancement of Agriculture and Forestry and by the Republic Fund for Advancement of Forestry (FUŠ). This Fund provided means for the construction of premises in Jastrebarsko (administrative building, laboratory, cold-storage plant, outbuildings, boiler-house and greenhouse). A large part of the equipment was donated by the so-called "American technical aid". The business premises were constructed through the efforts of Ante Lovrić, BSc. (Forestry) the Director of the Yugoslav Institute for Conifers, Franjo Knebl, BSc. (Forestry), Minister in the RH Ministry of Forestry and the academician, Mirko Vidaković.

This period was characterised by the emergence and desire to create the physionomy of scientific-research work, which would satisfy the need of forestry practice and science, and also provide long-term finance. The further education of young staff began with their enrolment in post-graduate studies, production of dissertations and specialisation abroad. In spite of the many difficulties all three scientific institutions (Institute of Forest Research, Department for the Control of Forest Seed and the Institute for Conifers) gave a significant contribution to development of Croatian forestry and science through their work and the results of their investigations.

DIRECTORS - FOUNDERS OF THE SCIENTIFIC INSTITUTIONS (Institute of Forestry Research, Institute for the Control of Forest Seed and the Institute for Conifers)

ŠAFAR JOSIP



Born on the 9th October 1906 in Delnice. Graduated at the Agricultural-Forestry Faculty in Zagreb, 1931. Served in the continental and littoral region of the Dinarides. A participant of the National Liberation War. The first director and the founder of the Institute of Practical Forestry Research, which later transgressed into the Institute of Forestry Research. Director of the Institute from 1949 and from 1951 to 1952. He worked in the Institute as a scientific counsellor until his retirement in 1969. An Associate of the Yugoslav Academy of Sciences and Arts in Zagreb. Associate Professor of silviculture at the Biotechnical Faculty in Ljubljana. Sub-editor of the Forestry Handbook (1946). Editor-in-Chief of the Forestry Gazette (1950-1951), Newsletter of the Institute of Forestry and Wildlife Management Research in Zagreb (1955-1958), editions of Plitvice Lakes National Park (1958) and Gorski kotar (1981).

He was engaged in the problem of cultivating selection and even-aged forests, land improvement, coniferisation and seed husbandry. He published a book "Silviculture" (1963) in which he studied the problem of cultivating selection forests. One of the most prolific forestry writers, of rich erudition, exceptional style and clarity of writing. He published over 100 scientific and professional studies.

LOVRIC ANTE



Born on 16th September 1904 in Novalja. Graduated at the Agricultural-Forestry Faculty in Zagreb, 1929. Until 1945 he worked as a county administrator, manager of a forest-office and taxation officer. After Liberation he was an administrative officer for forest exploitation in the Ministry of Agriculture and Forestry in Zagreb, Director of the Forestry Management Unit "Sušak", Head of the Department of Forestry and Wildlife Management in the Commission of State Control of NR Croatia, Head of the Planning Department in the Ministry of Forestry NRH, Head of the Board for Forestry at the Economic Council of NR Croatia, Director of the Institute of Forestry and Wild-

life Research NRH in Zagreb from 1958 to 1961. He was founder and first Director of the Yugoslav Institute for Conifers, Jastrebarsko, from 1961 to 1968.

He was a very capable organiser and leader, who contributed a powerful stimulus for the development of scientific thought in Croatia.

REGENT BORIS



Born on 15th October 1918 in Divača (Sežana Commune). Graduated at the Agricultural-Forestry Faculty in Zagreb, 1946. From 1946 to 1949 he worked in the region of Hrvatsko Primorje and Istria. From 1949 to 1950 he was an associate of the Federal Institute for Afforestation and Land Improvement of Karst in Split. From 1950 to 1957 he was an associate of the Institute of Experimental Forestry JAZU in Zagreb. From 1957 to 1959 he was an associate of the Institute of Forestry and Wildlife Research in Zagreb. Founder and first Director of the Institute for the Control of Forest Seed in SR Croatia, with headquarters in Rijeka, from 1959 to 1974. Associate of the Forest Research Institute, Jastrebarsko, until retirement in 1982.

He organised seed husbandry service in Croatia and set up guidelines for the production of better quality forest seed and seedlings. He was engaged in the study of seed quality, choice and selection of forest-seed stands and their land improvement. Excellent organiser, practitioner and conscientious scientific worker.

In 1968 he received an Award from the town of Rijeka for his studies in the field of forestry and forest seed husbandry, published in 1996-1997.

Other directors of scientific-research institutions

1. Institute of Practical Forestry Investigations (Zagreb)

Prof. Zlatko Vajda, PhD (Forestry); 23.7.1945 - 31.12. 1945.

Josip Šafar, BSc (Forestry), scientific counsellor; 1.1.1945-1951, 1954.

Ante Radovčić, BSc (Forestry); 1950-1951.

Vlado Supek, BSc (Forestry); 1954-1955.

Institute (legal successor) of Forestry Research (Zagreb)

Lovrić Ante, BSc (Forestry); 1958-1961.

Živković Vilim, BSc (Forestry); 1961-1964.

Prof. Kraljić Branko, BSc (Forestry); 1.1.1963-30.01.1964.

Oto Žunko, BSc (Forestry); 1.2.1969-31.12.1973.

2. Institute for the Control of Forest Seed, Rijeka

Boris Regent, BSc (Forestry); 1959-31.12.1973.

3. Institute of Conifers, Jastrebarsko - Yugoslav Institute of Conifers, Jastrebarsko

Ante Lovrić, BSc (Forestry); 1961-15.3.1968.
Žarko Hajdin, BSc (Forestry); 10.3.1968-31.7.1971.
Antun Dokuš, MSc (Forestry); 1.8.1971-31.12.1971.
Nikola Komlenović, PhD (Forestry); 1.8.1971-31.12.1971.
Joso Gračan, PhD (Forestry); 1.1.1972-31.12.1973

FOUNDING, DEVELOPMENT AND ROLE OF THE FOREST RESEARCH INSTITUTE, JASTREBARSKO (1974-2005)

Founding of the Forest Research Institute, Jastrebarsko

Based on the conclusions of the Managing Board of the Business Association of Forestry-Economic Organisations and the Republic Fund for Scientific Work, at the end of the 1960s and the beginning of 1970s, new organisation and merging of programmes of scientific-research work was initiated with the purpose of better results, their use and increased financial means.

The Forest Research Institute, Jastrebarsko, was founded on the 1st January 1974, by merging independent scientific-research institutions:

Institute of Forestry Research, Zagreb, Institute for the Control of the Forest Seed Quality, Rijeka, and the Yugoslav Institute for Conifers, Jastrebarsko. The founder of the Forest Research Institute was the Business Association of Forestry-Economic Organisations, Zagreb. The headquarters of the Institute was located in Jastrebarsko. The Institute was founded as a corporate legal entity with rights, obligations and responsibilities constituent for a work organisation on the basis of the Statute and Law.

According to valid provisions the Institute was entered into the Register of the Regional Economic Court in Zagreb No. US-597/74 of 26th June 1974. At the first session of the Workers' Council, Stanko Tomaševski, BSc (Forestry), the Secretary of Forestry in the Ministry of Agriculture and Forestry, was appointed acting Director of the Institute. Following the public competition, the Workers' Council elected Joso Gračan, MSc (Forestry) Director of the Forest Research Institute, with a term of office lasting 4 years, commencing on the 1st July 1974. He held this post until 18th March 1994. The Institute was entered into the Register of Scientific-Research Institutions, at the Ministry of Sciences, Education and Sport, under the Decision: RL-24, No. 06-641-1974 of 18th January 1977. The Ministry again confirmed the entry by Decision No. 06-201/1978.

With enforcement of the Law on Institutions (NN 76/1993 of 24th August 1993), the Forest Research Institute became a *public institution over which the Republic of Croatia acquired founder rights*. On the basis of the Law on Scientific-Research Activity (NN 96/93 of 2nd November 1993) the Forest Research Institute continued its activities *as a public Institute under the ownership of the*

Republic of Croatia. Following the public competition, announced by the Ministry of Sciences, Technology and Informatics, Prof. Branko Jeren, the current Minister, appointed Joso Gračan PhD scientific counsellor, as Managing Director, who continued in this post until 9th April 2004.

With enforcement of the Law on Scientific Activity and Higher Education (NN 123/2003) and its additional amendments, on the 29th April 2004, the Managing Board of the Institute elected Miroslav Benko, Ph.D. scientific counsellor, the Managing Director with a term of office of 4 years, commencing from 10th May 2004. Based on the provisions of the same Law, the Forest Research Institute continued work *as a public scientific institute* (Article 3 of the Institute's Statute).

Activities of the Forest Research Institute

After founding, the basic activity of the Forest Research Institute was scientific-research work in forestry, which involves:

- Carrying out scientific-research work in climatology, pedology, physiology, entomology, silviculture, breeding forest trees, seed husbandry, forest management, dendrology, forest protection, exploitation of forests, forestry mechanisation, forestry economy and business, the programming and wildlife management.
- Publication of the Institute's research results, with a possibility of publishing the results achieved by other institutions and persons, and translations of original foreign scientific and other studies of interest for forestry.
- Cooperation with domestic and foreign scientific and professional organisations and their associations for the purpose of exchanging experience and improvement of scientific research methods.
- Training and further education of staff in forestry and concern for the training of young scientific workers.
- Production of expert opinions, projects, forest-management bases and management plans, providing expert opinions and services on the request of physical and legal persons.
- Testing the quality of forest seed and plant material, and issuing in this respect relevant standardised documents (certificates) internal and external turnover.
- Organisation of teaching programmes from work and with work, courses and instructions, holding of seminars and lectures in order to report the results of investigations and possibilities of their application.
- Provision of laboratory services and Institute's staff to other organisations.

Secondary activities involve the production and marketing of forest seed, seedlings and decorative plants, etc.

Based on Article 26, Item 2 of the Law on Scientific-Research Activities and Higher Education, the Managing Board passed the Statute of the Forest Research Institute, Jastrebarsko, at the 5th Session on 4th May 2005, which came into force on 9th July 2005.

The Institute's activities are as follows: scientific, developmental, applicable investigations in the field; *biotechnical sciences*: scientific field; *forestry and horticulture*: branches of research; *silviculture, horticulture, management and forest protection, exploitation of forests*, combined with other research specialised fields of soil science, ecology, forest tree breeding and forest seed husbandry, plant nutrition, phytocoenology, forest fires, forestry entomology and phytopathology, integral protection of forests, forest typology, growth and increment, remote sensing, GIS, scientific organisation and economic policy in forestry, wildlife management, production of forest seed and forest reproductive material. Other important forms of activity are: publication of research results, organising and holding of scientific and professional meetings, seminars, workshops, counselling services, production of surveys and expert opinions, cooperation with domestic and foreign scientific institutions and associations, performing developmental and highly qualified investigations and assignments in the field of forestry and horticulture, etc. (Article 9 of the Statute)

Organisation and staff of the Institute

On the basis of the valid Associated Labour Act at that time, the Forest Research Institute, Jastrebarsko, was registered as *a scientific work organisation*, which had no organisations of associated labour in its structure. It was decided that such independent establishments would perform investigations on the basis of a joint programme on scientific-research work. According to the Law on Organisation of Scientific-Research Work it was determined that already founded independent scientific-research institutions could exist only if scientific research is performed by 15 scientific workers, of which at least 5 with the status of scientific counsellor. The headquarters of the Institute is located in Jastrebarsko, Cvjetno naselje 41, with departments in Trnjanska cesta 35, Zagreb, and in Bulevar oslobođenja 23, Rijeka.

Activities of the Forest Research Institute take place in the following organised units: - Department of Tree Breeding and Forest Seed Husbandry,

- Department of Ecology and Silviculture,
- Department of Forest Protection and Wildlife Management
- Department of Forest Management and Forestry Economics
- Department of Nursery Production
- Department of Common Interest

The total number of employees on 30th June 1985 was 81, and on 30 June 2005, 72.

Table 1 The total number of employees 1985 and 2005

30th June 1985		30th June 2005	
1 Graduates	34	1 Graduates	31
- Ph.D.	8	- Ph.D.	9
- M.Sc.	12	- M.Sc.	14
- Other graduates	14	- Other graduates	8
2 High school qualification	25	2 High school qualification	28
3 Other staff	22	3 Other staff	13
Total	81	Total	72

Table 2 Occupation of scientific and research workers

1985		2005	
Scientific counsellor	7	Scientific counsellor	1
Scientific associate	1	Scientific associate	5
Scientific assistant	12	Higher assistant	3
Higher research assistant	2	Assistants	10
Other researchers	12	Other researchers	12
Total	34	Total	31

A review of scientific and research workers on 30th June 1985 is given in the Monograph, on pps. 32-35, and personal data on the Institute's employees on pps. 158-198, during the period from the founding in 1945 (Institute of Forestry Research) up to 31st December 2005. In this period a total number of 344 were employed, of which 130 with higher professional qualifications. During the 60 years of the Institute's existence 30 employees acquired PhD, and 29 MSc, degrees; predominantly in the last 30 years.

Management and administration of the Institute

The Managing Director of the Forest Research Institute, Jastrebarsko, according to the valid provisions, acted as executive director, who represented and acted as spokesman for the Institute. Following an open competition, on the proposal of the Nominating Committee, the Workers' Council elected Joso Gračan, MSc Managing Director, with a term of office of 4 years, commencing on 1st July 1974. Stanko Tomaševski, BSc (Forestry), was acting Director from 1st January until 30th June 1974.

After merging of the Institute of Forestry Research in Zagreb, Yugoslav Institute of Conifers in Jastrebarsko and the Institute for the Control of Forest Seed in Rijeka, the managing bodies of the Institute were: *Assembly of the Working People, Workers' Council, Scientific Council and Researchers' Council*.

The Assembly of the Working People made a decision, by referendum, on the conclusion of agreement and merging, passing of the Institute's Statute, fundamental plan and programme of development, distribution of personal income and means of collective consumption, association or division of the Institute, establishment or termination of organisational units, business operations, name and headquarters of the Institute, acceptance of reports, the annual business operations and passing of the annual financial statement, and also other rulings within its competence.

The Workers Council consisted of 15 representatives, employees of the Institute, with a term of office lasting 2 years. The first Workers' Council was constituted on the 1st Session, on 3rd May 1974. The first President of the Workers Council was Oto Žunko, BSc (Forestry). The Workers Council performed duties and tasks within the field of its activity prescribed by the Statute.

The Scientific Council of the Institute consisted of scientific workers, and the Researchers' Council consisted of all scientists and professional staff. Dražen Cestar, PhD, scientific counsellor, was the first President of the Scientific Council and Researchers' Council. Based on the provisions of the Law on Scientific-Re-

search Activity (NN 93/1993) and the Law on Science and Higher Education, the founder of the Institute was the Republic of Croatia. Joso Gračan, PhD, scientific counsellor performed the duties of Director until 18th March 1994, and those of the Managing Director of the Institute until 9th May 2004. After a public competition, Miroslav Benko, PhD, scientific associate, was elected Managing Director of the Institute, with a term of office of 4 years, commencing on 10th May 2004. The Managing Director of the Institute represents and acts in the name of the Institute with regard to financial transactions, in all procedures before administrative and other state bodies, legal entities, with vested power of attorney without curtailment. The Managing Director of the Institute has legal authority in administrative operations within the scope of the Institute's activities, as entered in the Court Register. The Managing Director of the Institute is authorised and has the power of attorney to independently conclude agreements on behalf of the Institute, if they do not exceed the value of 200.000 kn.

The governing bodies of the Institute are: Managing Board, Managing Director, Scientific Council, Chiefs of Staff Collegium. The organisation, activities and method of passing decisions of particular bodies is determined by the Statute of the Forest Research Institute.

PROGRAMMES AND OBJECTIVES OF RESEARCH (1974-2005)

In the years following World War II there were no clearly determined programmes and objectives of research in forestry. That period lasted up until 1963 and has been described in the part on scientific institutions prior to the founding of the Forest Research Institute. It was a period characterised by three major goals: *establishment of poplar plantations, expansion of the area of distribution and establishment of conifer cultures* and investigation of *natural reforestation*.

Programmes and objectives of research (1974-1990)

After the founding of the Forest Research Institute, Jastrebarsko and production of a joint programme of research (Croatian Forests Ltd., Faculty of Forestry and the Forest Research Institute), the methods of research improved, research teams were formed, new equipment acquired and concern for the advancement and further education of young staff increased.

During that period (1974-1990) the objectives of research were: *preservation and enlargement of our forest fund and improvement of its quality, decrease in costs of forest management, increase in the production of biomass, protection of the forest and study of the structure and stability of forest ecosystems*. Programmes of scientific research work consisted of projects, assignments and themes. We cite here only the most important projects:

- Pedological map of Croatia (1976-1985).
- Vegetation map of Croatia (1976-1985).

- Protection of man's environment (1981-1985).
- Study of the structure and functioning of forest ecosystems of Croatia (1976-1985).
- Investigation and mapping of types of forests and forest stands (1976-1990).
- Improvement of seed husbandry, nursery production and raising of forest cultures (1976-1990).
- Forest protection - investigation of agents which threaten the stability of forest ecosystems (1971-1999).
- Investigation of the organisation and economics of forestry (1976-1990).
- Exploitation of forests, mechanisation in forestry and forest communications (1976-1990).
- Economic and bio-ecological agents of forest cultivation (1981-1985).
- Integral protection of the forests and improvement of the forest fund on the Karst (1981-1990).
- Social-economic and technical factors of management in the field of forest wood-processing (1981-1985).
- Investigations in the Karst area of Croatia (1976-1980).
- Study of the production of biomass and achievement of biological stability of the forests (1986-1990).
- Study of optimal conditions for the expansion of wildlife and wildlife management in Croatia (1981-1990).
- Harmful influence of fire fires on vegetation, biotype and the landscape in coastal areas and recultivation of damaged soils (1976-1990).

Programmes and objectives of research 1991-2005

In spite of the war devastation and destruction of our forests, national parks, arboretums, and despite the occupation of one third of the area of Croatia (1991/1992), management of the forests and scientific research work did not cease.

With the founding of the public enterprise "Croatian Forests, Inc. Zagreb and the transition to financing research from the budget (Ministry of Science, Technology and Informatics) excellent conditions were created for uninterrupted development of science and scientific research work in forestry (1991-1995).

I. For the period 1991-1995 the Ministry of Science, Technology and Informatics approved four projects. We give below their titles and principal researchers.

- The Soils of the National Parks of Croatia (J. Martinović, PhD)
- Genetic Test of Phenotypes in Seed Orchards and Experiments on Walnuts (F. Mrva, PhD)
- Ecological-Economic Valencies of Forest Types (A. Krznar, MSc)
- Forest Cultures, Forest Protection and Reforestation of Damaged Stands (N. Komlenović, PhD)

Scientists and research workers of the Institute cooperated in 10 projects conducted by the Faculty of Forestry.

Following a public competition at the end of 1995 the Ministry of Science, Technology and Informatics approved the Institute's programme entitled "*Reforestation and Protection of Forest Ecosystems*" which comprised five themes of permanent research work of interest for the Republic of Croatia, as follows:

1. Tree breeding and forest seed production. Principal Researcher Joso Gračan PhD, scientific counsellor (Code: 0024101).
2. Improvement of nursery production and raising of forest cultures. Principal Researcher Stevo Orlić PhD, scientific counsellor (Code: 0024102).
3. Protection of forest ecosystems from biotic and abiotic factors. Principal Researcher Miroslav Harapin PhD, scientific counselor, (Juraj Medvedović PhD, Higher Scientific Associate) (Code: 0024103).
4. Permanent monitoring of ground and soil waters. Principal Researcher Branimir Mayer PhD, scientific counsellor (Stevo Orlić, PhD) (Code: 0024104).
5. Growth and development of forests of specific assignment. Principal Researcher Miroslav Benko PhD, scientific associate (Code: 0024104, contracted 1997).

The Forest Research Institute, Jastrebarsko and the Ministry of Science signed an agreement on 22nd November 1996, with duration of three years. The programme was extended up to 31st December 2000.

In 1998 the Ministry of Science approved 6 junior research workers and another 6 during 1999 and 2000.

On the basis of a new public invitation for applications on the 26 October 2001 the Forest Research Institute proposed five projects of permanent research work. The following two projects were accepted:

1. Improvement of forest tree breeding and seed husbandry. Principal Researcher Joso Gračan PhD, scientific counsellor (Code: 0024001).
2. Investigation in tree nurseries and forest cultures. Principal Researcher Stevo Orlić PhD, scientific counsellor (Code: 0024002) (Sanja Perić PhD, scientific associate).

An agreement between the Ministry of Science and the Institute of Forestry was signed in August 2002 for a duration of three years. By a Decision of the Minister, Dragan Primorac PhD, research and financing was extended up until 31st December 2005 and later up until 31st May 2006.

The Forest Research Institute at the completion of these two contracts produced final reports, which were approved.

II. For the period 1991-1995 *Croatian Forests Ltd. Zagreb*, accepted the joint programme of scientific research work of the Faculty of Forestry, Zagreb, the Forest Research Institute, Jastrebarsko and the Directorate of Croatian Forests, which consisted of three projects, nine sub-projects and 78 assignments. We give below the (teaching) projects and sub-projects:

- Project I:** Improvement of biomass production of forest ecosystems of Croatia. Coordinator: Nikola Komlenović PhD, scientific counsellor.
- Sub-project A:** Increase in production and stability of forest ecosystems. Coordinator: Prof. Slavko Matić, PhD, with 21 assignments.
- Sub-project B:** Investigation of forest types and forest sites. Coordinator: Ankica Krznar MSc, with 5 assignments.
- Sub-project C:** Improvements in seed husbandry, nursery production and raising of forest cultures. Coordinator: Stevo Orlić PhD, with 8 assignments.
- Sub-project D:** Investigations in the region of the Mediterranean. Coordinator: Prof. Šime Meštrović, PhD, with 9 assignments.
- Project II:** Decline, reforestation and protection of forest ecosystems. Coordinator: Miroslav Harapin PhD, with 2 sub-projects.
- Sub-project A:** Integral protection of the forest - investigation of the agents which threaten the stability of forest ecosystems. Coordinator: Miroslav Harapin PhD, with 8 assignments.
- Sub-project B:** Decline and reforestation of forest ecosystems. Coordinator: Prof. Branimir Prpić, PhD, with 14 assignments.
- Project III:** Management, exploitation and use of resources in forestry. Coordinator: Prof. Simeun Tomanić, PhD, with 3 sub-projects.
- Sub-project A:** Exploitation of the forest, forest communications and mechanisation in forestry: Coordinator: Prof. Stanislav Sever, PhD, with 10 assignments.
- Sub-project B:** Investigation of the organisation, economics and sociology of forestry: Coordinator: Prof. Simeun Tomanić, PhD, with 9 assignments.
- Sub-project C:** Informatics in forestry: Coordinator: Prof. Vladimir Hitrec, PhD, with 2 assignments.

Of the 76 different assignments, scientists and research workers conducted investigations in 28 assignments and cooperated in several assignments of the Faculty of Forestry.

The joint programme (Faculty of Forestry, Forest Research Institute, Croatian Forests, Inc.) for the period 1996-2005 was not changed. The programme comprised two projects, 8 sub-projects and numerous assignments. Scientists and research workers of the Forest Research Institute conducted investigations in 5 sub-projects and 47 assignments.

We give below the titles of the projects and sub-projects:

- Project 1:** Protection and improvement of biomass production in the role of functioning of the manifold roles and functions of the forests. Coordinator: Nikola Komlenović PhD (1998), Dr. Joso Gračan, PhD.
- Sub-project 1:** Securing of reforestation as a measure of stability and sustainable production of phytomass in natural forest ecosystems. Coordinators: Vlado Krejči, MSc (2003), Tomislav Dubravac, PhD, 5 assignments.
- Sub-project 2:** Increase in productivity and stability of forest ecosystems. Coordinator: Stevo Orlić PhD (2004), Sanja Perić PhD, 20 assignments.

Sub-project 3: Exposure of the forest to harmful effects and increase in their protection. Coordinator: Nikola Komlenović, PhD (1998), Boris Vrbek PhD, 14 assignments.

Sub-project 4: Securement of maintained assortments in the production and use of natural stands according to ecological-management types of forest. Coordinator: Miroslav Benko, PhD, 7 assignments.

Project 2: Use and management of capital in forestry. Coordinator: Prof. Ante Krpan, PhD.

Sub-project 2: Development and use of ecologically acceptable techniques and technology. Coordinator: Dijana Vuletić PhD, 2 assignments.

A public invitation for proposals for new programmes and projects for the period 2006-2008 has been issued by the Ministry of Science, Education and Sport. The Forest Research Institute has proposed two programmes and around 10 projects. The procedure of evaluation and acceptance is in progress.

Croatian Forests Ltd., Zagreb, are also in the process of considering and accepting a new programme of scientific research work for the period 2006 - 2010.

FINANCING AND INVESTMENTS IN THE DEVELOPMENT OF THE FOREST RESEARCH INSTITUTE

After the Second World War, during the period from 1945 to 1953, scientific research work was mainly financed from the state budget. After that period research and development was financed by the funds of independent scientific institutions. With the establishment of the *Business Association of Forest Economic Organisations* in 1963 the means for financing scientific research work was increased. The rate of contributions for financing and investment ranged from 0.25 - 0.86% from the annual overall income of the Business Association. From 1974 a so-called "income-based system" began of financing and investment in research and development of scientific institutions, which lasted until 1990. During the period from foundation of the Institute sources of financing and investment in development (1945-1990) changed with regard to the name, sources and amount of finance, which were usually very low. Other more important sources are: *Federal and Republic Budget, Fund for Advancement of Forestry, Republic Fund for Scientific Work, Republic Community for Scientific Work, Self-management Community of Interest for Forestry, Business Association of Forestry and Conversion of Wood and Legal Successors, American Technical Aid* (cereal fund, American agreements), self-financing and other sources. After attaining independence sources of financing research and investment in the development of science in the Republic of Croatia were: *Ministry of Science, Technology and Informatics, Ministry of Science, Education and Sport, "Croatian Forests" Ltd., Zagreb, own income and other sources (World Bank)*.

In general, from 1965 to 2000, the average agreed and realised financial means in the total income of the Forest Research Institute, according to the

source, amounted to: "Croatian Forests" Inc. and own sources 70%, the Ministry of Science, funds and other sources 30%.

Financial income for research and capital investments in Croatian Forestry followed the level of investment in the development of science in Croatia. Investment in the infrastructure and acquisition of equipment in developed countries ranged from 20% to 40% of the total income, and in Croatia 6.58%. In the Forest Research Institute on average 4.23% for the period from 1976 to 1985.

It should be stressed that the Fund for Advancement of Forestry, Republic Fund for Scientific Work and Forestry Operative Units donated to the former Yugoslav Institute of Conifers significant non-recurring financial grants for the construction of buildings etc. (administration building, laboratory building, cold-storage plant, greenhouse, outbuildings, pheasant farm, etc.). The town of Jastrebarsko transferred to the Institute's ownership an area of 24 ha for construction of facilities and production of forest seedlings.

The total income of the Forest Research Institute, Jastrebarsko for the period from 1995 to 2004 amounted to 106,264,610.00 kn, from the following sources:

– Ministry of Science, Education and Sport	46,936,702.00 kn
– Croatian Forests, Ltd.	35,644,072.00 kn
– Own income	7,387,077.00 kn
– Nursery	15,474,472.00 kn
– Other income	822,287.00 kn
Total	106,264,610.00 kn

Total income according to years and sources are shown in the Monograph of the Forest Research Institute, Jastrebarsko 1945-2005 (GRAČAN 2005).

Scientific research institutions in Croatian forestry: Institute of Forestry Research, Zagreb, Institute for the Control of Forest Seed, Rijeka and the former Yugoslav Institute of Conifers, Jastrebarsko, including the Forest Research Institute from 1945 to 2004 did not operate with a loss, settled all credits, no questionable and disputable claims occurred and monthly salaries were regularly paid. Long-term programmes and annual plans of research and business plans were successfully carried out.

Table 3 Capital investments in the development of the Institute from 1995 to 2004

Year	Ministry	Own and Croatian Forests	Total
1995	27.836	806.078	833.914
1996	-	649.984	649.984
1997	-	938.767	938.767
1998	-	162.663	162.663
1999	-	285.832	285.832
2000	-	215.000	215.000
2001	130.000	620.077	750.077
2002	386.000	90.698	476.698
2003	259.435	559.475	818.910
2004	1.100.000	357.827	357.827
Ukupno	1.903.371	4.066.945	5.970.316

From *the table on capital investments from 1995 to 2004* it can be seen that the Institute invested an amount of **5,970,316 kn** of its own resources and those of Croatian Forests Inc. and the Ministry of Science, of which own resources and those of "Croatian Forests" Inc. amounted to **4,066,945 kn (68.20%)** and of the Ministry **1,903,371 kn (31.80%)**. As the total income for that period (1995-2004), amounted to **106,264,610 kn**, only **4.60%** was spent on investment, which is insufficient compared with European countries. For financing Programmes of research (1996-2000) Croatian Forests, Ltd., Zagreb approved significant financial means for the construction and maintenance of buildings (seed extraction plant, outbuildings, cold storage plant, polythene greenhouses), hydraulic engineering of tree nursery and acquisition of equipment (atomic adsorber, cold storage chamber, pressure extractor, forest tractor, informatics equipment, transportation means). With the financial means of the Ministry of Science, Education and Sport, and with the Institute's own means (2001, 2002, 2003) modern laboratory equipment was acquired for scientific research work (Leco - CNS elementary analyser, ionic chromatograph, SC chromatograph, D x 600 Dionex, atomic electronic spectrophotometer Perkin Elmer, pH conductometer, flame photometer). During 2002 the Forest Research Institute began establishment of the Laboratory for Molecular Genetics (PCR, bioanalyser, vertical and horizontal electrophorus, analytic balance, etc.). The laboratory is the joint laboratory of the Forest Research Institute and the Faculty of Forestry, Zagreb. Two very important instruments, an *ionic chromatograph and digital position meter* (counter of annual rings), were acquired by "Croatian Forests", Ltd., Zagreb through credit within the framework of the World Bank Project "Reforestation and Protection of Coastal Forests". These instruments are located in the Forest Research Institute for the use of Croatian forestry.

INTERNATIONAL PROJECTS

At the end of the 1960s and beginning of the 1970s three international projects were started within the framework of so-called "American Aid" between the former Yugoslav Institute of Conifers, Jastrebarsko and the United States of America (USA). To carry out these investigations the financial means of the USA debited the grain fund which the former Yugoslavia repaid for the supply of corn and other cereals. We give below only basic data:

- "Susceptibility to insects and diseases of selected North-American types of trees grown in Yugoslavia", 1966-1971. Principal Researcher Miroslav Harapin, PhD.
- "Hybridisation of conifers of different provenances", 1967-1972. Principal Researcher Franc Mrva, PhD The Forestry Institute, Skopje cooperated in this project (Božidar Ničata, PhD, and Mile Stamenkov, PhD).

- "Investigation of the effect of insecticides and pesticides on fauna of soil in forestry practice and forestry nurseries", 1971-1976. Principal Researcher Miroslav Harapin, Ph.D. The Faculty of Agriculture, Zagreb cooperated in this project (Prof. Željko Kovačević, PhD).
- " International Cooperative Programme on Assessment and Monitoring of Air Pollution Effects on Forests
- " (ICP Forests). The Republic of Croatia cooperated in this programme from 1987, with interruptions in years 1989 and 1991. The Forest Research Institute, Jastrebarsko is the national focal centre for Croatia, and Joso Gračan, PhD is the national coordinator. The programme is carried out within the framework of the United Nations Economic Commission for Europe (UNECE).
- The programme "European Forest Genetic Resources" (EUFORGEN) commenced work in 1993 on the basis of the S1 and S2 resolutions of the Ministerial Conference on the Protection of European Forests. The Republic of Croatia has cooperated in the programme since 1994. The Ministry of Agriculture, Forestry and Water Resources Management appointed the Forest Research Institute as the national centre for Croatia, and Joso Gračan, PhD was appointed the national coordinator.
- "Reforestation and Protection of Coastal Forests", Ministry of Agriculture, Forestry and Water Resources Management, Ministry of Internal Affairs of the Republic of Croatia, Croatian Forests Ltd., Zagreb, Faculty of Forestry, Zagreb, Forest Research Institute, Jastrebarsko, and other institutions, cooperated in the production of this project. The project was financed by: FAO, Rome, World Bank, New York. Prof. Joso Vukelić, PhD directed the project. FAO approved the project in 1995. The Forest Research Institute, Jastrebarsko supervised the forest-cultivation works for three years for the amount of 25,000 US dollars annually. The World Bank and Croatian Forests acquired two very important instruments (a digital counter of annual rings and an ionic chromatograph).
- The project "Assessment of the Value of Mediterranean Forests - According to Their Total Value". Prof. Mauricio Merlo, PhD commenced work on the project for assessment of the total value of Mediterranean forests within the framework of the Regional Programme of the European Forestry Institute, with headquarters in Solsona (Spain). The results were published in the book "Valuing Mediterranean Forests - Towards Total Economic Value". Croatia cooperated in the production of the evaluation (Forest Research Institute, Jastrebarsko).
- COST Action E-33, FOR REC, Forest Recreation project, directed by Dijana Vuletić, PhD, scientific associate.
- COST Action E-52 International experiment in provenances of Common Beech, directed by Joso Gračan, PhD, scientific counsellor, Deputy Mladen Ivanković, MSc.

INTERNATIONAL MEETINGS

IUFRO - Section 22 - Improvement of Forest Trees and Forestry Genetics, held in Croatia as one of the first international meetings after the Second World War in Zagreb (Institute of Forest Research) and in Jastrebarsko (Yugoslav Institute of Conifers) from 13th to 17th September 1965.

IUFRO - work group S.4.04. held an international symposium under the title "Management of Forests of National and Nature Parks" in the Plitvica Lakes National Park from 15th to 20th May 1983. The Forest Research Institute organised the meeting, at which 16 papers were presented ("Radovi" special edition No. 1/1984).

At the 18th IUFRO Congress, held in Ljubljana from the 7th to 21st September 1986, 28 scientists and research workers of the Institute participated with invited and accepted papers and numerous posters.

The sixth meeting of the IUFRO - work group for the Silver fir was held in Zagreb from the 24th to 27th September 1990, organised by the Faculty of Forestry, Forest Research Institute and Croatian Forests, at which 24 papers were presented (two from the Institute).

Representatives of the Forest Research Institute participated with papers or posters at the following IUFRO - congresses:

XVIII Congress in Japan (Kyoto, 1981), XIX Congress in Canada (Montreal, 1990), XX Congress in Finland (Tampere, 1995), XXI Congress in Malaysia (Kuala Lumpur, 2000 and the XXII Congress in Australia (Brisbane, 2005).

Representatives of the Institute participated in the work of the International IUFRO - Conference work-groups 1.6.00 (Improvement and Cultivation of Oaks) and 2.8.05 (Genetics of the Oaks), held in Zagreb from 20th to 25th May 2000.

The 13th International Intercalibration Course for Mediterranean Forests was held in Crikvenica from 24th to 28th May 1999, organised by the Institute and Croatian Forests.

The 19th Task Force Meeting of ICP Forests was organised by the Forest Research Institute, Faculty of Forestry and Croatian Forests, and held in Zagreb from 24th to 28th June 2003.

The international meeting of IUFRO work groups 8.01.00 and 8.01.08 under the title Counter Erosive and Water Protective Role of the Forest and Procedures for its Preservation and Improvement, held in Zagreb on 27th November 2004.

DOMESTIC SCIENTIFIC AND PROFESSIONAL MEETINGS

During the period from 1945-2005 the Forest Research Institute and earlier scientific research institutions organised many domestic scientific and professional meetings (conferences, symposia, seminars, training courses, reports etc.) at which the results and recommendations for forestry practice obtained through

fundamental, applied and developmental research were presented, and the possibility of their application. We give below some of the most important:

The first symposium in the programme of scientific research work of the Forest Research Institute for the period 1981 - 1983, held in Stubičke toplice from the 25th to 26th April 1984.

Symposium on the application of mechanisation in tree nursery production and silviculture, held in the Forest Research Institute in the spring of 1985.

On the occasion of the 40th anniversary of forestry seed husbandry a meeting was held on the 30th April 1999 in the Forest Administration of Karlovac Branch Office at which 5 papers were presented (Radovi, vol. 34, no. 1/1999).

On the occasion of the 150th anniversary of the Croatian Forestry Society (1846-1996) in October 1996 a symposium was held in the Faculty of Forestry in Zagreb at which two scientific books were presented "Improvement in Biomass Production of Forest Ecosystems" and "Protection of the Forest and Acquisition of Wood". The books were published at the same time, and contain the results of investigations within the framework of programmes of scientific research work for the period from 1991 to 1995.

At a symposium held in Zagreb on the 10th and 11th April 2002 a scientific book was presented "Science in Sustainable Management of Croatian Forests". The book contains 64 studies, representing reports on the fulfilment of programmes of research during the period 1996-2000.

Seventh Biological Congress held on the island of Hvar from 24th to 29th September 2001.

First Congress of Croatian Geneticists, held on the island of Hvar in June 2002.

Eighth Croatian Biological Congress, with international participation, held in Zagreb from 27th September to 2nd October 2004.

Second Congress of Croatian Geneticists held in Supeter on the island of Brač from 24th to 27th September 2005.

ACKNOWLEDGEMENTS AND HONOURS

For their successful work, results achieved and national and international scientific and professional cooperation the Forest Research Institute, Jastrebarsko, and the scientific research institutions which preceded it, have received many acknowledgements, plaques and praise. It is not easy to evaluate the contribution of our forestry practice, national bodies, educational and scientific institutions, Croatian Forestry Society and Academy of Forestry Sciences in the development of scientific research work and achieved results of research during the past 60 years of work. A very important contribution to the scientific advancement and further education of young scientists and research workers of the Institute, was made possible by the Faculty of Forestry University of Zagreb, Ministry of Science, Education and Sport, Ministry of Agriculture, Forestry and Water Resources Manage-

ment, Croatian Forests, Ltd., Zagreb, Forest Management Units (forest administrations) and all forestry offices, who set aside funds for financing scientific research work and the acquisition of modern equipment. We believe that this cooperation will continue and grow. Although it is impossible to mention all those who successfully cooperated in the past and who still cooperate today, we consider it is necessary to thank all those associations from the Homeland War and after the war, all primary and middle schools, local institutions for awarding acknowledgements, plaques and commendations in connection with allocation of any help with planting material for landscaping the environment.

We would also like to take this opportunity of thanking the town of Jastrebarsko for their excellent cooperation and presentation of the annual award to the Forest Research Institute, Jastrebarsko in 1981. We also thank the Croatian Ecological Society for awarding a plaque on the occasion of the 35th anniversary of the founding of the Society (15th November 2004).

Finally at the end of this chapter on the development of the Forest Research Institute during the past 60 years of its work and activity we remember those scientists and research workers who received acknowledgements and awards.

President of the Republic of Croatia Franjo Tuđman presented the following awards post mortem to:

- **Nikola Komlenović**, PhD, scientific counsellor, with the Order of Danica Croatia with the Image of Blaž Lorković for outstanding service in management.
- **Branko Mayer**, PhD, scientific counsellor, with the Order of the Croatian Three-Strand Pattern for outstanding contribution to the development and prestige of the Republic of Croatia.
- **Petar Rastovski**, PhD, scientific counsellor, with the Order of the Croatian Three-Strand Pattern for outstanding contribution to the development and prestige of the Republic of Croatia.
- **Zlatko Perić**, MSc, scientific assistant, with the Order of the Croatian Three-Strand Pattern for outstanding contribution to the development and prestige of the Republic of Croatia.
- **Goran Bušić**, MSc, scientific assistant, with the Order of the Croatian Three-Strand Pattern for outstanding contribution to the development and prestige of the Republic of Croatia.

For his successful work and activity the following acknowledgements and awards were presented to Joso Gračan, PhD, Scientific Counsellor, long-term Director and Managing Director of the Forest Research Institute, Jastrebarsko and well-known and acknowledged scientific and social worker: The Order of Merit with Silver Rays (1974), Award of the Commune of Jastrebarsko (1981) - the Order of Merit for the People with Silver Rays (1985). Croatian Parliament presented Joso Gračan with the Annual Award for Science (1998). On the occasion of the 35th anniversary of its foundation the Croatian Ecological Society awarded Joso Gračan, PhD, on the 15th November 2004, with a Plaque for his overall work in the Society. On the occasion of the 160th anniversary of the

Croatian Forestry Society and the 120th anniversary of the Forestry Gazette, Joso Gračan, PhD was presented with an Award in recognition for many years of work.

Since its foundation, the Institute of Forestry Research in Zagreb (1945), the Institute for the Control of Forest Seed in Rijeka (1959), the Yugoslav Institute of Conifers in Jastrebarsko (1961), and the Forest Research Institute, Jastrebarsko in 1974, have in the past, still have and will have in the future, an important role in the development and progress of Croatian forestry and forestry science.

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