# Od Redakcji

1992 IUFRO'S CENTENNIAL YEAR


# Preface

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The rise of biotechnology has resulted in a significant development of forestry and related studies on trees, making use of genetics, molecular biology and phytopathology. These studies have been initiated and coordinated by world's biggest scientific organization concerned with forestry, International Union of Forestry Research Organizations (IUFRO), through the activities of its subject groups and working parties. One of IUFRO's main objectives has been the development and application of new biotechnological methods in forestry.

Following the most recent scientific reviews, the relationship between biotechnology and forestry is especially important in the following areas: 1. Forestry's special situation; 2. Biotechnology and growth rate; 3. Trees from somatic cells, and 4. Protection from harmful agents (1). Biotechnological methods are also gaining growing recognition in the study on biodiversity of forests. Intensification of forestry as well as proper utilization of the existing forest resources require extensive research. Wooded areas need to be effectively protected (2).

Phytopathology of forests, together with other sciences aimed at forest protection, plays an important part in this process. Projected and already ex-

isting diseases of trees and forests have to be well recognized the methods of their prevention and control should be implemented. To achieve that, extensive use is made of the methods of biotechnology and genetic engineering. According to Hubbes (3) studies on phytopathology of forests should make use of: "...Restriction fragment length polymorphism (RFLP) of mitochondrial and ribosomal DNA. DNA fingerprinting and polymerase chain reaction (PCR) as diagnostic tools for pathogen characterization, taxonomic studies and the isolation and identification of genus responsible for host resistance and pathogen virulence. Few genus with significant potential for tree resistance to fungal pathogens have so far been isolated. Studies of gene expression via biochemical pathways that govern tree defence or pathogen virulence are sparse. The availability of greater numbers of well defined genes would allow the development of trees with multigenic disease resistance thus preventing pathogens from quickly overcoming the defence barriers. More effective organisms for biological control could be developed...". For many years, fungi of *Trichoderma* spp. have belonged to such organisms, being extensively used to control and prevent fungal diseases of plants. They have been widely applied in forestry, agriculture, horticulture and orchardry in the form of various biopreparations. Mechanisms of biochemical activity of those biopreparations have not been well known so far. Reactions occuring in plants and plant organs treated with those preparations need to be subject to thorough physiological, biochemical, anatomical and phytopathological studies.

In order to better understand biological and ecological mechanisms involved in the biological treatment of plant diseases with *Trichoderma* – based preparations as well as to compare the achieved results in this respect, international meetings of specialists in this field have regularly been organized. One of them was a workshop on "The role of biological control in fungal diseases of broadleaved trees" under the auspices of IUFRO Working Party S2.06.14: "Complex diseases" held in Puszczykowo on May 19-20, 1992. It was organized by the Department of Tree Resistance of the Institute of Dendrology, Polish Academy of Sciences in Kórnik, and Phytopathology Research Station, Centre of Agricultural Research in Merelbeke (Belgium). This meeting was also devoted to the many years' scientific cooperation between scientists from both institutes. It was an opportunity to thank Prof. Roger Veldman, founding father of this cooperation, who retired at the end of 1992. The workshop was attended by 25 people from Austria, Belgium, Bulgaria, Italy, Czecho-Slovakia and Poland. They delivered papers which are presented in this issue of Biotechnologia. As a result of a lengthy discussion, the following conclusions were reached: 1. Some *Trichoderma* spp. can be used both in biological control of fungal diseases of forest trees and in control of woods diseases; 2. The effect of *Trichoderma* spp. on pathogens depends on the method applied to introduce spores into the plant; 3. Further investigations should include taxonomic, physiological, and histological aspects, enzymes and antibiotics production as well as ecosystems; 4. Most

antagonistic *Trichoderma* species strains should be selected, taking into consideration various pathogens; 5. The laboratory in the Institute of Dendrology in Kórnik was chosen for collection of *Trichoderma* species and strains; 6. *Trichoderma* spp. is a good bioindicator of soil condition. Analyses of soil mycoflora should be carried out; 7. The next meeting on this subject should be held in two years, in September 1994, possibly in Slovakia. To commemorate this meeting, Prof. Roger Veldeman planted a *Fagus silvatica* tree in the remembrance forest' of the Wielkopolski National Park. He used biopreparation based on *Trichoderma harzianum* spores in order to promote rapid and healthy growth of the tree.

## Literature

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2. Krugeman S.L., (1992), Biotechnology and biodiversity – the interrelationships. The Forestry Chronicle Vol. 68(4), 459-461.
3. Hubbes M., (1992), Forest pathology of the future, Eur. J. For. Path. (in print). Lecture presented during the IUFRO Centennial Meeting in Berlin and Eberswalde, Sept. 1992.

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