

TRENDS IN EUROPEAN FOREST TREE PHYSIOLOGY RESEARCH

Tree Physiology

VOLUME 2

Series Editor:

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Aims and scope

The series “**Tree Physiology**” is aimed to cover recent advances in all aspects of the physiology of woody plants, i.e.: environmental physiology including plant-atmosphere, plant-pedosphere/hydrosphere, and organismic interactions; whole tree physiology including storage and mobilization as well as maturation and senescence; woody plant tissue culture and molecular physiology for micropropagation, transformation of chemicals, preservation of gen-pools, membrane transport, transformation of tree species, etc. In addition, technological advances in tree physiology will be covered together with the achievements obtained with these techniques.

Although the main emphasis will be on basic research, applied questions will also be addressed. It is the scope of the series to provide advanced students in forestry and plant biology as well as researchers working in the various fields of tree physiology and woody plant physiology. Since also applied questions will be addressed, part of the series will also be of interest for environmental and applied biologists.

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Cost Action E6: EUROSILVA

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Preface

The increasing concern for the serious problems of forest decline that occurred in the Northern Hemisphere in the late 1970's and early 1980's led to an emphasis on the necessity of promoting and setting up investigations into the basic physiological mechanisms of forest trees. Since then, the concern about rapid changes has decreased along with the increase of monitored data on European forests health status. But tree physiology has faced new questions about changing climate and increasing atmospheric carbon dioxide concentrations. Advances in plant molecular biology and forest genetics have opened up new avenues in the research on forest tree physiology. At the same, time it has become evident that molecular and genetic tools give only a basis for further research on tree structure and function, which needs basic tree physiology again.

On the other hand, the problems of forest decline in Europe are not over. They are no longer discussed daily in the media, but stress is an everyday phenomenon experienced by European forest trees. For instance, in southern Europe and mountainous regions, drought stress and many other abiotic or biotic factors are stressors and cause problems to forests with many important social and protective functions. Stress physiology is a branch of everyday physiology in traditional forestry. How to grow a forest with maximal carbon-binding functions and optimal wood quality and rich in biodiversity. In the northern parts of Europe, discussions on forest ecosystem biodiversity have suggested a need to have more intensive tree growth in some areas in order to ensure wildlife, recreation and biodiversity in other forest areas.

Problems related to the development and ageing of forest trees are discussed widely and the role of tropospheric ozone in the forest injuries in Europe remains obscure. The European forest health monitoring programme has so far not included tropospheric ozone questions.

This book presents some of the research topics addressed by COST Action E 6 EURO-SILVA Forest Tree Physiology Research since 1995. The number of publications somehow related to the action was over 800 by the end of the year 1997, and preliminary calculations seem to reveal additional 1000 publications on European tree physiology. Our knowledge of this field has thus been improved. The name EUROSILVA was launched in Paris in February 1986. Now, fifteen years later, we have had a real PanEuropean network on tree physiology.

I would like to thank all contributors for their valuable work, all anonymous reviewers of the articles and all working group chairmen and editors for helping me.

Oulu, March 2001

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