

Coactions and Competition in Higher Plants

ZDENĚK LAŠTŮVKA

English Editors

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Koakce a kompetice vyšších rostlin

ZDENĚK LAŠTŮVKA

ACADEMIA



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(1923-)



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(1930-)



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PREFACE

Professor Hans Molisch, Department of Plant Physiology and Anatomy, Vienna University, Vienna, Austria, published the book **"Der Einfluss einer Pflanze auf die andere, Allelopathie"** in 1937, 50 years ago. He first formulated the basic principles of relationships between the plants, which results in the formation of individual plant community.

After 50 years, Prof. Dr. Zdeněk Laštůvka, D.Sc., Department of Plant Physiology and Anatomy, University of Brno, Czechoslovakia, prepared this Monograph on the similar theme. Fifty years, is long time in science, (i). new methods with unusual precision were developed, (ii). new branches of Biochemistry and Biophysics developed, which give new possibilities to solve such problems and (iii). Cybernetics made possible to understand and evaluate the responses of plants in new way. To solve the problems is not easy, it requires not only the literary overview but also own rich experiences. Prof. Laštůvka, possess these qualities. He studied the physiological principles of formation of interrelationship among the plants for 30 years. His Allelopathy Research Group, tried to solve the field problems related to allelopathy. Till now his group has published more than 50 original scientific papers, in which he gradually solved individual parts of this complex problem, through suitable experiments. His group studied the interrelationships among plants in controlled conditions. He used cybernetics to formulate the conclusions. He gave universal view on interrelationships among the organisms and also among the organisms and environment.

Prof. Laštůvka's collaboration with prominent foreign scientists (Profs. C.H. Müller, University of California, Santa Barbara, USA and A.M. Grodzinsky, University in Kiev, Ukraine) helped in solving these complex questions. For better understanding of this book, he included Definitions of many terms, which are confusing in the literature and they had variable meanings by different authors.

Prof. Laštůvka describes in this book '**Coactions and Competition of Higher Plants**', how the plant physiologists sees the question of interrelationships among the plants and how it is possible to solve these questions through the experimental studies. I wish this book will be of interest to readers and to elicit new studies to deepen our knowledge in this subject area.

December 16, 1985

Prof. Dr. Vladimír Rypacek, D.Sc.

Member,

Czechoslovakian Academy of Sciences

Prague, Czechoslovakia

FOREWORD

It is a sincere pleasure for me to write a foreword for this Classic Book 'Coactions and Competition in Higher Plants'. This is the first book on coactions and competition worldwide published in Czech language. It was translated because the English is read in most countries of the world, hence, the allelopathy scientists would be able to know the phenomenon of coactions and competition in plants. The allelopathic interactions in coactions and competition in higher plants greatly influences the productivity of field crops, fruits trees and forest trees in natural and managed ecosystems. In tropical and subtropical countries, many crops are grown in crop mixtures, owing to their several advantages. Likewise, in natural forests, many tree spp. grow together, besides many herbs and shrubs grow underneath their canopy. Now due to increased human population, the farmers to meet the diverse requirements of their families, grows several crops with trees, called Agroforestry. However, little information is available about the allelopathic interactions in coactions and competition in the above agro-ecosystems. Worldwide, it is the only book available on these important aspects. This book consists of 8 chapters viz., (i) Basic principles, (ii) Competition, (iii) Secondary compounds, (iv) Non-contact coactions, (v) Antagonistic contact coactions, (vi) Synergic contact coactions, (vii) Conclusions, (viii) References and Appendix. It is hoped, that this book will provide inspiration and in-depth knowledge of the coactions and competition in higher plants.

Prof. Lastuvka was an eminent Allelopathy Scientist. His Allelopathy Research Group was strongest in Europe and worked for longest period of 43 years (1956-1998). He wrote this book, based on his 30-years (1956-1986) research experience. Prominent Allelopathy Scientists in his group were : Profs. Frantisek Plhak, Jaroslav Minar and Miroslava Vicherkova.

One of the activity of International Allelopathy Foundation, Hisar, India, is to sponsor the translation of classical Books on Allelopathy from Non-English languages to English for the benefit of

English speaking scientists. Since 2004, the International Allelopathy Foundation was trying to get this book translated. Finally, Prof. Jana Kalinova, Ceske Budjovice, Czech Republic agreed to translate it. I am highly thankful to her for sparing her valuable time and spending lot of energy in completing this difficult Job. She has done it in a very lucid way in 12-months. I and Prof. Barbara Politycka, Poland have edited the book for English language and divided the running text in Sections and Sub-Sections to make it more useful to readers.

This book is the third such Translation from the International Allelopathy Foundation. It has already published the English translation of two books (i) Hans Molisch (1937). *Allelopathy: Influence of one Plant on Other* (2002), (ii) A.M. Grodzinsky (1979). *Allelopathy in Soil Sickness* (2006). It is making arrangements for the translation of few more Classic books on Allelopathy to English language, for which the kind co-operation of scientists, who may help in such translation, is very much required.

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