JUSTUS LUDEWIG VON USLAR, AND THE FIRST BOOK ON ALLELOPATHY

Justus Ludewig von Uslar, and the First Book on Allelopathy

by

R.J. WILLIS
University of Melbourne, Australia

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PREFACE

This book is the first of three planned books on the History of Allelopathy by R.J. Willis endorsed by the International Allelopathy Society (IAS), and it marks the first volume to be published in a series of Special Publications endorsed by the International Allelopathy Society.

Knowing his expertise on the subject, I invited Dr Willis to deliver a plenary lecture on the History of Allelopathy at the Second World Congress on Allelopathy held in August 1999 in Thunder Bay, Canada. Dr Willis presented a fascinating talk illustrating the controversial and colourful history of the discipline. All science disciplines have their own evolutionary history full of interesting stories, influential characters, scientific breakthroughs and paradigm shifts. Allelopathy is no exception. However, the history of allelopathy stands out to be different from the other disciplines on several accounts.

Firstly, allelopathy has a much longer history than many contemporary subjects such as physics, chemistry, biology or even mathematics. It goes back to the very beginning of agriculture, may be even earlier. Understanding how plants influence other plants or succeeding crops has been the preoccupation of man from prehistoric times for the predominant reasons of maximising the growth of crops and for combating weeds or. Plant interaction is a complex phenomenon involving many physical and biotic processes, and allelopathy plays a part in it. Secondly, unequivocal proof is the cornerstone of scientific claims and advancement of scientific thoughts, but because of its complex interacting nature, demonstration of allelopathy under field conditions is next to impossible, and yet there is no doubt that it exists. This has been a formidable challenge for scientists working in this field and there is no shortage of critics and sceptics of allelopathy. The history of allelopathy is replete with unfounded theories, faulty experimentations and unreasonable conclusions regarding plant interactions. However, many of the unexplained and wrongfully explained observations have been subsequently proven to be useful in achieving sustainable agriculture. Thirdly, because of its complex and interacting nature, delimiting the phenomenon (allelopathy) as a discipline of science has become a serious problem, and to a certain degree is responsible for the controversy regarding the very definition of allelopathy that ranges in spectrum from quite open-ended to unreasonably restricted. Fourthly, modern-day industrial agriculture has become completely reliant on the ever-increasing use of agrochemicals for weed control and crop production and we are now familiar with their adverse effects on the environment and human health. We can learn a great deal from the agricultural knowledge of the ancient Greeks and Romans and that of the traditional societies that use allelochemic interactions as a tool, in particular to control weeds and insects in order to enhance crop production. More than ever we

need sustainable crop production free from industrial chemicals. These reasons alone make a strong case for exploring the developmental history of allelopathy that has contributed to sustainable agriculture in the past, and can offer success for the future.

Dr Willis presented a plan to write a series of books on the History of Allelopathy to the Publications Committee of the International Allelopathy Society during its Third World Congress in Tsukuba, Japan, in August 2002, and the society was delighted to support him on this endeavour. It was agreed that all the books must be peer-reviewed to get the society's endorsement, and I am pleased that Kluwer Academic Publishers has agreed to take the responsibility to publish this and the subsequent books. It is also my hope that we can make further arrangements with Kluwer to publish other peer-reviewed monographs, books and conference proceedings on allelopathy.

On a personal note, I could not be happier seeing Dr Willis taking this admirable initiative of writing the series. Willis narrates the developmental history of allelopathy in a story telling style highlighting the influential figures and their thoughts, events and places that shaped the discipline over time. History can be tedious for its insistence on the accuracy of dry chronological accounts of figures, facts and events. But Willis makes the history come alive through his remarkable style of combining historical facts with unbiased expert judgment and an excellent sense of humour. Willis's history writing reads like an engaging novel describing a fascinating saga full of colourful characters and events that is hard to put aside even for a second sip of the morning coffee. And yet it is not just a story. Willis walks us through times, traditions and languages with remarkable ease. He offers expert analysis of scientific validity of claims made by the influential researchers and theorists in appropriate social and scientific contexts of the time. I am sure the readers of this book will enjoy the historic journey as much as I did.

Professor Azim Mallik

Series Editor
President, International Allelopathy Society

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Finally, I wish to thank the International Allelopathy Society and, in particular, its President Prof. Azim Mallik, for their encouragement in the publication of this work.

FOREWORD

Many years ago, I purchased by mail order a copy of *Die Bodenvergiftung durch die Wurzel-Ausscheidungen der Pflanzen als vorzüglichster Grund für die Pflanzen-Wechsel-Wirthschaft* by Justus Ludewig von Uslar (1844) from a book dealer in Germany. I was familiar with the title as it had been cited in Grümmer's seminal monograph on allelopathy written in 1955. In any case, the book sat on my shelf unread for many years. In recent times, I have focused my attention on the history of allelopathy, as this intriguing study crisscrosses the domains of ecology, botany, agriculture and horticulture, and touches on a host of unusual topics including astrology, homeopathy and mythology. I had cause to revisit von Uslar's little book, and realised that it is likely the first monograph devoted to the topic that we now know as allelopathy, that is, the chemical interactions of plants. However, further research revealed that very little has been recorded about this book or its author. The work that follows is an attempt to bring to light what is known about Justus Ludewig von Uslar, and to place his unusual book into the context of the history of allelopathy.

Rick Willis

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Melbourne, Australia