Lal points out that research in developing countries is minimal and goes on to identify specific gaps. Meyer brings up some good questions that need to be addressed when planning a project and the difficult decisions to be made. The roles FAO, USAID, and SCS play in international development were also presented.

A brief introduction was given to the social and economic issues in the third section. Considering the importance these factors play in project success rates, I don't think these issues were adequately addressed. Harper and El-Swaify did discuss differences between actual vs. farmer-perceived levels of project success. This is an important distinction to recognize.

Conservation needs packaged with yield improvement and stabilization components were therefore thought to be the most successful. Model farm approaches were discussed by Cochrane and Thraraz, and Lovejoy and Napier presented institutional constraints. There still seems to be lack of agreement though regarding the introduction of high vs. low technology into developing countries.

The next two sections dealt with Practices and Projects, and Case Studies and Country Reports. Hudson presented the nuts and bolts of some commonly applied conservation practices along with practical field examples. Some good examples from Francophone countries in Africa were presented by Roose. Other case studies and projects were included from Kenya, Malawi, South Korea, Indonesia, Caribbean, Ethiopia, South and Central America, Taiwan, and Australia.

Considering the diversity of cultures, there were several common guidelines. Sanders sums these up nicely in the final section of the book.

This book will be of particular interest to development organizations, project leaders, and other research teams involved in the planning and implementation of soil and water conservation projects overseas. This information may also be of use to students in international agriculture and rural development programs. Although the case studies are not in depth, some general conclusions can be drawn. Many points outlined, which determine the success or failure of projects seem obvious; however, it was interesting to read how few examples cited followed these guidelines. The companion book on recommendations, which addresses the third objective of the workshop, should be a welcome addition.

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**Effects of Atmospheric Pollutants on Forests, Wetlands and Agricultural Ecosystems (NATO ASI Series G: Ecological Sciences, Vol. 16)**


This book contains the proceedings of the NATO Advanced Workshop on the Effects of Acidic Deposition on Forests, Wetlands and Agricultural Ecosystems, which was held in Toronto, Canada, in 1985. The workshop brought together approximately 40 scientists from Europe, the USA, and Canada, all involved in various aspects of air pollution research in natural and agro-ecosystems, and was divided into four working groups focusing on the potential impact of air pollution and atmospheric acid deposition on (i) forests, (ii) soils and soil microbial populations, (iii) agricultural crops, and (iv) wetlands and peatlands. The book provides a comprehensive summary of the "state of the science" in each of these main areas, identifies issues that warrant further research, and offers contrasting viewpoints as to the nature and/or causes of observed changes in ecosystem properties. It is further complemented with several papers on ecosystem stresses and plant physiological processes in light of their role as predisposing or exacerbating factors in pollution damage and ecosystem response, particularly in the context of the widely publicized forest decline phenomenon.

The book is divided into 10 sections, seven of which specifically focus on forests, followed by a summary report from each of the working groups with a list of future research needs. One-third of this volume is dedicated to the effect of air pollution on agricultural crops and wetlands; as a whole the discussions emphasize forest ecosystems. The book begins with a section on forest decline, indicating the variation in symptomatology between the various geographical areas in Europe, Canada, and the USA. It is followed by a discussion of the different scenarios and hypotheses proposed to explain reported forest damage and forest growth declines, often complemented with supporting evidence from the literature or experimental research.

These papers clearly illustrate how little consensus exists over whether forest damage associated with pollution primarily takes place via canopy or belowground (soil) processes. An additional set of papers focuses on the potential role of stress (such as drought, O3 exposure, pathogen attacks, and nutrient deficiencies) in determining forest response to pollution. This is followed by a critical review concerning the usefulness and the limitations of dendrochronology techniques in the investigation of growth decline and forest effects. A separate section is dedicated to soil effects and contains an analysis of the various aspects of soil acidification due to acid deposition and its influence on the soil as a growth medium. Apart from a few reports on forest moss and lichen studies, the remaining papers mainly deal with agricultural and wetland ecosystems. There are several reports from greenhouse, controlled chamber, and field experiments on the effects that acid rain, O3, and gaseous pollutants, either alone or in combination, have on the physiology and growth of crop plants. A final section is dedicated to the specific conditions in peat bogs (i.e., strong natural acidification, organic matter accumulation, organic acid formation, and low redox potential) as they influence the sensitivity of wetlands to pollution effects.

From this assemblage of papers, which often represent contrasting opinions, the reader is likely to gain a better appreciation for the complexity of the effect that air pollution can have on natural and man-made ecosystems, and the uncertainties that still exist in this area. The book is well written, and its organization of content renders it particularly practical as a reference volume. It is highly recommended to anyone interested in becoming up-to-date on the current state of knowledge on air pollution effects, or in gaining a better understanding of the various processes involved. (This review was written while the author was funded by the Electric Power Research Institute, under contract RP-2621 with Martin Marietta Energy Systems, Inc., under contract DE-AC05-84OR21400 with the U.S. Department of Energy. Publication no. 3318, Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, TN 37831-6038.)