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TROPICAL SOIL SCIENCE**

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ELEMENTS OF TROPICAL SOIL SCIENCE

BY

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SECOND EDITION

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TO MY FAMILY IN THREE GENERATIONS

PREFACE

DURING nearly twenty years spent in advising tea planters on their practical problems, I have often been asked to recommend a suitable text-book on soils, manures and agricultural chemistry in general. Of the many books, excellent in themselves, that have been current during this period, none, so it seemed to me, was an obvious choice. Most of them are written from the point of view of temperate zone agriculture, and those which are more general in their treatment are written for students rather than for the practical man. On the other hand, books on tropical agriculture devote little space to the soil, its properties and cultivation, and their material is for the most part out of date.

This book is a small contribution towards filling the gap. I have made my objective a limited one and have restricted myself to those aspects of the subject which most frequently arise in advisory work : to be useful, a book must be short. In dealing with theory, I have tried to give just sufficient to act as a framework to support the practical applications, and I have reduced tables and diagrams to a bare minimum.

The material on which these chapters are based, has been drawn from a variety of sources too numerous to acknowledge in detail. I owe a particular debt to the Rothamsted Experimental Station where I first came into contact with agricultural research and with the practical farmer. The numerous members of the planting com-

munity, with whom I have discussed problems in the course of my advisory duties, have been my teachers in a very special sense.

I am greatly indebted to Professor J. A. Prescott, Dr. T. J. Marshall and Dr. C. S. Piper, of the Waite Agricultural Research Institute, Adelaide, South Australia, and to Mr. E. A. Cornish, for valuable criticisms of the manuscript during preparation. Their help removed a number of blemishes: those that remain must be held to my account.

I am glad to acknowledge the permission of the Director and Board of the Tea Research Institute of Ceylon to make use of data compiled in the laboratories of the Institute. For permission to reproduce data published in *Endeavour* (Fig. 1) and the *Empire Journal of Experimental Agriculture* (Fig. 5) my thanks are due to the Editors and to Imperial Chemical Industries Ltd. and the Clarendon Press respectively.

Finally, I wish to thank my brother, Mr. W. A. Eden, for undertaking to see the manuscript through the press.

*St. Coombs,
Talawakelle,
Ceylon.
December, 1945.*

T. EDEN

PREFACE TO THE SECOND EDITION

THE advances made since 1947 in many fields of research bearing upon the principles of tropical soil science have made necessary a revision of the text of even so elementary an exposition of the subject as is contained in this book. In the meantime also I have extended my working knowledge of tropical soils to the African continent and have thus seen many problems in a new perspective.

Accordingly I have modified and extended several sections of the book and added two new chapters. The additions to existing chapters relate chiefly to the genesis of laterite and catenary systems; the water relations of soil; the principle of base exchange in soils as influencing salinity and alkalinity of soils under faulty irrigation practices, and the remedial measures required. Changing trends in fertilisers have also been noted.

The incidental references to the problem of the availability of nutrients have been removed from Chapter III and reconstructed with new material into a separate chapter. In addition, in order to put into perspective the various methods of soil amelioration and conservation described in Chapters VI to VIII I have attempted in Chapter IX a brief review of the long term problem of fertility maintenance.

During the preparation of this edition I have had no official institutional connection. I have had however the good fortune to live in the vicinity of the Rothamsted Experimental Station and the Commonwealth Bureau of

Soil Science, and to enjoy the incomparable resources available there. It is a special pleasure to acknowledge again my continued debt to Rothamsted during my forty years of professional work. I am particularly grateful to Mr. D. H. Boalch for library facilities; to the late Dr. H. Greene for sending me his valuable circular letters on recent advances in soil research in the tropics, and to Mrs. M. K. Milne for help in locating literature.

Dr. E. M. Chenery, Director of the Tea Research Institute of East Africa was kind enough to make a number of suggestions about revision from which I have been able to benefit.

To Dr. H. L. Penman, O.B.E., F.R.S. and the Editor of "Weather" I am indebted for permission to reproduce Figure 1. and to the Editor of "Outlook on Agriculture" and Imperial Chemical Industries Ltd., for similar permission in regard to Figure 6.

T.E.

Sidmouth.

May, 1964.

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