

# Soil and Plant Analysis

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A Laboratory Manual of Methods for the  
Examination of Soils and the Determination  
of the Inorganic Constituents of Plants

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**C.S. Piper**



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# SOIL AND PLANT ANALYSIS

*A Laboratory Manual of Methods for the  
Examination of Soils and the Determination  
of the Inorganic Constituents of Plants*

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## PREFACE

In 1928, in order to secure greater co-ordination between the various laboratories in Australia engaged in advisory or systematic work on soils, the methods then in use at the Waite Institute were published by Professor J. A. Prescott and the present author (*Methods for the Examination of Soils, C.S.I.R. Pamphlet No. 8*). The methods which were given in that publication were those selected as the result of critical studies, carried out on Australian soils in the chemical laboratories of the Waite Agricultural Research Institute and tentatively adopted for use. They were published to serve as a basis for discussion, so that some measure of standardization of the methods in use in the various Australian laboratories could be reached.

Since that publication the present author has had many valuable discussions with chemists working throughout Australia and New Zealand, as well as in other parts of the world. Much additional experience in the chemical and physical examination of soils and the chemical analysis of plant material has also been gained by his colleagues in the Department of Agricultural Chemistry of the University of Adelaide and the Division of Soils of the Council for Scientific and Industrial Research. This additional experience has led to many amendments in the original methods, to make them applicable, generally, to the wider range of soils encountered, while new methods have been added, for determinations not previously included. As a result of the favourable reception accorded to the earlier publication, and in response to numerous requests, it has been felt desirable to compile a new edition of the methods in use, incorporating the additional material available. With the exception of two or three of the less common determinations, all of the methods included in the present publication are in actual use in the laboratories of the Waite Institute and can be recommended to give accurate and reliable values for a wide range of samples.

The experience gained in handling numerous soil samples, which have been collected from all parts of Australia by the C.S.I.R. Division of Soils, has been particularly valuable, since it has necessitated the adoption of methods which will give dependable values when applied to these widely varying soil types. Methods originally developed for a single soil type have often been found to be inapplicable, without suitable modification, to the wide range of soils encountered in Australia.

The science of pedology is rapidly growing. Methods for the examination of soils, at present in use, will change as the store of our knowledge increases. New methods will continue to be developed to enable the measurement, in the laboratory, of those soil properties, which will give a more accurate description and definition of each soil type, while older methods will be improved as developments take place in other branches of pure science.

The author wishes to express his appreciation to all his colleagues in the laboratories of the Waite Agricultural Research Institute for the many valuable discussions which he has had with them and for the assistance which they have so generously given. The compilation of the present edition of the methods in use in these laboratories would not have been possible without this whole-hearted co-operation. It has been impracticable to give personal reference in the text to many of the small modifications introduced into methods, since these have frequently been adopted as the result of discussions among several different workers on a problem, but as far as possible acknowledgement has been made. The author desires particularly to express his indebtedness to Professor J. A. Prescott, Director of the Waite Institute, for the active interest which he has maintained in this work and the encouragement and advice which he has so freely given throughout the whole time that it has been the author's privilege to work with him.

C.S.P.

Adelaide,

December, 1942.

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