

Analytical methods manual 1984

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ABSTRACT

This manual is a compilation of details of methods of analysis currently being used routinely in the Land Resource Research Institute (LRRI) Ottawa. It includes physical, chemical, and microscopic procedures for analyzing mineral and organic soils as well as several chemical procedures for analyzing water samples. For a number of analyses, several methods are presented and information is given on how to choose the most appropriate one for the purpose. Statements of accuracy and precision have been included whenever there were sufficient data available as a result of testing in the analytical service laboratory LRRI, Ottawa.

RÉSUMÉ

Ce manuel est un recueil des méthodes détaillées d'analyse utilisées actuellement de façon courante à l'Institut de recherches sur les terres (I.R.T.) d'Ottawa. Il comprend des méthodes d'analyse physique, chimique et microscopique des sols minéraux et organiques de même que plusieurs procédés d'analyse chimique de l'eau. Pour un bon nombre d'analyses, on présente plusieurs méthodes et l'on explique comment choisir celle qui convient le mieux aux buts poursuivis. La précision des méthodes est mentionnée quand elle est appuyée par des données suffisantes, accumulées au fil des essais qui ont été réalisés au laboratoire des services d'analyse de l'I.R.T.

COMMITTEE ON ANALYTICAL METHODS

The Committee on Analytical Methods, who actively participated in reviewing, updating and rewriting methods for inclusion in this manual, is comprised of the following personnel of the Land Resource Research Institute, Central Experimental Farm, Ottawa, Canada K1A 0C6:

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PREFACE

This manual is a compilation of details of methods of soil and water analysis currently being used routinely in the Land Resource Research Institute (LRRRI), Ottawa. It was prepared by, and largely for, the technical staff of LRRRI but it may have wider use. All of the basic methods have been published previously in the Manual on soil sampling and methods of analysis second edition 1978 J.A. McKeague editor. Some methods have been deleted, other methods have been added and details of all procedures are updated and tailored to equipment and facilities at LRRRI Ottawa. A brief outline of soil sample collection and preparation has been included as general information.

This edition of the manual has adopted the loose-leaf format and different numbering system to permit flexibility in the revision of approved methods and in the addition of new ones as they are published. As methods are revised they will be forwarded automatically to known holders of this manual. Users of this manual are requested to note errors in the text and to forward this information to the editor.

For a number of analyses, several methods are presented and information is given on how to choose the most appropriate one for the purpose. For example, in choosing an extractant for Fe, dithionite-citrate (method 84-010) would be used to estimate non-silicate Fe, and pyrophosphate (method 84-012) would be a more suitable extractant of organic-associated Fe. Other choices depend on the degree of accuracy required relative to time involved. For example, method 84-008 for carbonates is more rapid but less accurate than method 84-009.

When sufficient data were available accuracy and precision data have been included. They are the results of testing in the analytical service laboratory, LRRRI, Ottawa. Interlaboratory studies are currently being conducted to generate specifications for precision and accuracy.

The editor wishes to thank the research technicians and scientists who contributed to this manual either by revising and updating methods or by criticizing the first draft of the material. Particular thanks are due to Dr. J.A. McKeague for his guidance in completion of this manual.

Comments and suggestions for improvement in this manual are cordially invited.

B.H. Sheldrick
Editor