SOIL SURVEY MANUAL (REVIEW NO. 1)\(^1\)


A very different publication from the early edition of 1957, is the Soil Survey Manual issued in August 1951. It has been entirely revised and in the process become more than thrice as large. The sections listed in the early edition are amplified or rather, rewritten, and several subjects, such as color, consistency, and structure are expanded to form main section headings. As is to be expected, that almost indispensable aid to soil science — aerial photography — is very fully covered. Well developed also is the section on yield production and soil management practices, aspects that the New Zealand soil surveyor is not directly concerned with.

The new Manual compared to the early one is a record of progress during the past 14 years — a record that should give a feeling of pride to soil scientists. (Or pedologists!) Symptomatic of this progress is the move forward into definitions, many of which as the authors realize will be improved from time to time.

Altogether the Manual is tops. The members of the staff of the Division have written the various sections, and the Chief of the Division has successfully handled the tremendous job of unification.

Foreign soil scientists look to U.S.A. to give a lead in how to make soil surveys, and a study of the Manual shows they will be far from disappointed.

There are only a few points in the text on which I desire to make some comment and these will be obvious can hardly be taken as criticisms.

The impression is given that excavations or borings are chiefly needed to identify the profile of a soil unit (p. 14). Perhaps more emphasis should have been placed on the use of the soil auger to check in more cases than is implied to locate the boundary.

Topsoil and subsoil, popular names for soil layers, are said to be terms difficult to define and poor respectively. (p. 185) I find them very helpful in writing reports that I hope the farmers will read, believing they understand that the topsoil is the humus bearing layer and the subsoil, the layer below it in which the plant roots grow.

The classification of stoniness (p. 217–18) becomes complicated when the designation of the soil shown in Fig. 41 depends on whether the soil is productive. It may be better to make the classification of stoniness applicable to all units of soil, independent of their utilization.

It is of interest to note that the soils of pH 5.1–5.5 are classed as strongly acid (p. 235), whereas in New Zealand those with pH between 5.2 and 6.0 are rated as moderately acid. The difference is doubt is due to the fact that there is much more cropping in U.S.A.

Soil family groupings have been tentatively made on four criteria, based mainly on the soil horizons (p. 501). New Zealand soil scientists have found that the most useful grouping is the suite based on parent material, e.g., Taupo suite is derived from rhyolite pumice and Kaharoa suite from hard rhyolite fragments.

A brief section on how to interpret chemical analyses of soils would have been useful, and it would have been very nice had the U.S. Department of Agriculture classification for determining textural classes been dropped (p. 208).

The impression is gained that the Division has held on firmly to the objective of building a science of soil surveying and not allowed itself to be caught up in short cut schemes aimed to serve people interested in a particular phase of land use. Following the lines that are now available in manual form the soil scientist in U.S.A. produces the workman-like bulletins on the soils of separate counties that can be used by a variety of people.

The Manual stops short only of teaching the scientist the art of soil surveying — the feel of what to recognize as a soil series, and how many to usefully establish in his country — but this is something that can hardly be put into words. It takes the soil scientist to the stage where if he has developed something of the art, he can agree with the remark of one of the authors (p. 10), "The rewards of work well done can be very satisfying, both intellectually and emotionally." — L. I. GRANGE.

SOIL SURVEY MANUAL (REVIEW NO. 2)


This greatly improved edition of the Soil Survey Manual, which was first issued by Dr. C. E. Kellogg in 1957, is nearly four times as large as its predecessor. It reflects the many recent improvements and developments in techniques of making soil surveys, cartographic expression of the results, and more concise terminology for describing the soil mapping units in the United States. Especially commendable is the addition of sections dealing with the relationship of soil surveys to closely related fields of research and the emphasis on the values in making predictions for various purposes. The newer concepts of soils as dynamic three dimensional landscapes, an important advance in the study of soils as natural bodies, is presented.

The recent progress toward a more concise terminology for the description of the color (Munsell notation), texture, structure, consistency, permeability, stoniness, and salinity of soils in the United States is summarized. With the rapid development in this field of soil science it is inevitable that there still exist many differences in terminology and ideas about soils even in this country. While one side of controversial issues is usually emphasized in the Manual, mention is also made of other views in most cases. The issue concerning the differentiation of soil types and soil phases is thrown open for debate.

A few controversial issues are not adequately presented by the Manual. Many soil scientists in the United States do not agree either that a soil must be capable of supporting land plants or that the lower limit of biological activity corresponds with the lower boundary of the soil. The rather fruitful differentiation between weathering and soil formation processes is retained from the earlier edition. The discussion of parent materials from the standpoint of their mode of origin rather than a discussion of parent rocks based on their properties is probably the weakest section of the Manual. However, even the mention of these points is probably to over-emphasize them in proportion to the many fine features of this publication.

The advances in cartographic techniques are presented in a section on choice of base maps, a greatly improved and expanded section on the use of aerial photographs in soil surveys, and an appendix on map compilation and reproduction. In view of the present widespread use of aerial photographs as base maps in the United States, the discussions on map preparation with the plate table and by compass traverses have been placed in the appendix.

The discussions of the use of soil surveys, the new sections on yield predictions and soil management practices, and soil groupings on the map reflect the greatly increased use being made of soil surveys in the United States today. The relationship of soil surveys to other fields of agricultural research and their utility in getting the results of these researches back to the areas where they are applicable are very ably presented in the section on soil survey reports.

The excellent, short, general bibliography has been revised. A special bibliography of representative soil surveys from contrasting regions of the United States and some sample descriptions of soil series are helpful additions to the text.

This book is the soil surveyor's Bible in the United States. The Soil Survey Manual should be on the reference shelf of every agronomist and soil scientist. — E. P. WHITESIDE.

MINERAL NUTRITION OF PLANTS

Edited by Emil Truong, Madison, Wis.: The University of Wisconsin Press. 469 pages (illus.). 1951. $6.00.

Mineral Nutrition of Plants is a symposium of 18 papers presented at the University of Wisconsin in September 1949. The contributors include Daniel I. Arnon, O. Biddulph, G. B. Bod-\(^2\)

\(^1\)The new edition of the Soil Survey Manual will have a wide application in many parts of the world. Because of this, it was suggested that both an American and the view of a soil scientist living outside the United States would be of interest to readers of the PROCEEDINGS. Dr. L. I. Grange of the New Zealand Soil Bureau, Wellington, N. Z., has kindly consented to prepare a review (No. 1) from the standpoint of a resident in his part of the world, and Dr. E. P. Whiteside of Michigan State College presents the American reaction to the manual.

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