

The last chapter is devoted to so-called non-essential trace elements that can be beneficial or toxic to plants. It covers the behaviour of these elements in soils, their influence on plant metabolism, toxicity disorders and differential crop tolerance. The chapter closes with a short reference to some radio-nuclides in soils and plants.

Three appendices contain useful information on the content of several trace elements in fertilizers, manures and amendments, removal of micronutrients by several crops and methods for the correction of their deficiency.

Next there is a list of books and articles that can provide further reading on this subject. A bibliography with the references cited in each chapter is brought together at the end of the book, that still includes a list of botanical names.

I enjoyed reading this book and found it well-balanced and instructive. Though it is not intended for specialists, it is an excellent textbook for graduate students and teachers and very useful for anyone associated with research or extension work, wishing to become familiar with the important role trace elements play in crop production.

AMARILIS DE VARENES

*Department of Agricultural and Environmental Chemistry
Instituto Superior de Agronomia
Tapada da Ajuda
1399 Lisboa Codex
Portugal*

Terminology for soil erosion and conservation

Terminology for soil erosion and conservation—Concepts, definitions and multilingual list of terms for soil erosion and conservation in English, Spanish, French and German. ISSS-E. Bergsma (principal author), ITC-Enschede/ISRIC-Wageningen, 1996, 313 pp., Dfl25.

In a broad discipline like soil science similar things may have a different meaning for different people. A classic example is pedology which was introduced in Europe to embrace all aspects of soils, whereas in North America pedology includes only soil genesis, morphology, classification and mapping (Warkentin, 1994). The need for standardization of terminology was recognized in the 1950's and the Soil Science Society of America began publishing glossaries of soil science terms in its Proceedings between 1956 to 1965. At the same time dictionaries of soil science were published by Lozet (1954) and by Plaisance and Cailleux (1958). It was also recognized that language barriers hampered dissemination and exchange of knowledge between soil scientists of different countries. In order to overcome some of these problems Jacks (1954) prepared the *Multilingual Vocabulary of Soil Science* based on the work of Dr H. Greene and Plaisance (1958) compiled the *Lexique Pédologique Trilingue*.

Since then several dictionaries, glossaries, encyclopedia and lexicons on soil science have been published of which the *Glossary of Soil Science Terms* (SSSA, 1997) which ran through several editions, is today probably most widely used. Following the

specialisation trends in soil science, specific glossaries were published in the 1970s and 1980s on subjects such as soil micro-morphology and forest humus terms.

This book, 'Terminology for soil erosion and conservation', is an example of a specific glossary devoted to these two fields of study. The rationale for the book was the need to standardize terminology and bridge language problems induced by the fact that scientists from very different disciplines such as land-use planners, sociologist, agronomists, ecologists operate in these fields. It is quite obvious that in some of these disciplines, similar terms are used for different things, and vice versa.

The major part of the glossary has been authored by Eelko Bergsma of ITC-Enschede, the Netherlands, with the help of several co-authors from around the world. The glossary has been prepared for the Sub-Commission C, Soil and Water Conservation of the International Society of Soil Science. In 1988 the Sub-Commission prepared a volume on methods in soil erosion research (ed. R. Lal), and the current book is a logical addition.

The glossary is divided into 3 sections: Central Concepts, Term Definitions, and a Multilingual List of Terms. More than half of the book (161 pages) is devoted to the Central Concepts. These are terms considered to be important in the study of rain erosion processes, hazard for rain erosion and the planning of soil conservation. In the glossary, the term 'rain erosion' is defined as the erosion caused by rainfall and the resulting runoff. In total, 17 such concepts are described grouped in 4 sections: Rain erosion features and processes (Soil crusting and sealing; Overland flow; Rill erosion; Gully erosion), factors influencing rain erosion hazard (Rain erosivity; Relief effect; Soil erodibility; Soil cover; Soil conservation; Agroforestry), factors in conservation planning (Rain erosion hazard; Soil loss tolerance; Land and soil productivity), and tools in conservation planning (Rain erosion mapping; Models of rain erosion; Multiband remote sensing and erosion). The discussion of a Central Concept includes related terms, the definition, and a detailed qualitative description. Often local examples are given which clarifies the concept, and most examples are illustrated with b + w photographs and drawings. Quantitative aspects are included for a number of concepts as for instance in rain erosivity and in the models of rain erosion. All terms used in the description of the Central Concepts and which are related to soil erosion and conservation are printed in italics. A full definition of these terms can be found in the Term Definitions section which is particularly useful. Each Central Concept is described in concise paragraphs, division and subdivisions distinguished by letters. These short subdivisions of the text affect the readability but, alas, this is a glossary and not a textbook.

The description and definitions of the terms follow the central concepts. This section is prepared with the same care as the Central Concepts and provides detailed descriptions of some 526 commonly used terms. Again, both quantitative and qualitative aspects are included as well as illustrations. Hereafter alphabetical lists are presented whereby the equivalent of the English term is given in Spanish, French and German. The equivalents are not tabulated but simply listed which is not so practical if one looks, for example, for the English equivalent of *Bodenlösung*. At the end of the book there is an overview of what the authors consider Reports of Regional Importance (for some 40 countries) followed by an extensive list of references (32 pages).

Overall it can be concluded that this glossary provides a wealth of information and is

a welcome addition to the research methodology book mentioned above. Its main strength is undoubtedly the detailed and international viewpoint on the currently used terminology in soil erosion and soil conservation studies. But is this glossary of use to anyone dealing with such studies? The answer is a definite yes, but there are a few limitations. All terms are related to water erosion and those studying wind erosion may find the book less useful. Descriptions of instruments for field research, for example tipping buckets, are not included. No indication is given as to which terms should be used in the study of soil erosion and soil conservation. For example what should be preferred: surface crusting or capping, decapitation or truncation, ground cover or soil cover, gully plug or checkdam. Also a list of obsolete terms would have been beneficial to the standardization of the terminology. And lastly, readers with a Russian, Portuguese, Arabic or a Chinese mother tongue may decide to postpone acquisition as the ISSS is planning to publish it in their languages as well.

ALFRED E. HARTEMINK
University of Technology
Department of Agriculture
PO Box 82 Lae
Papua New Guinea

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