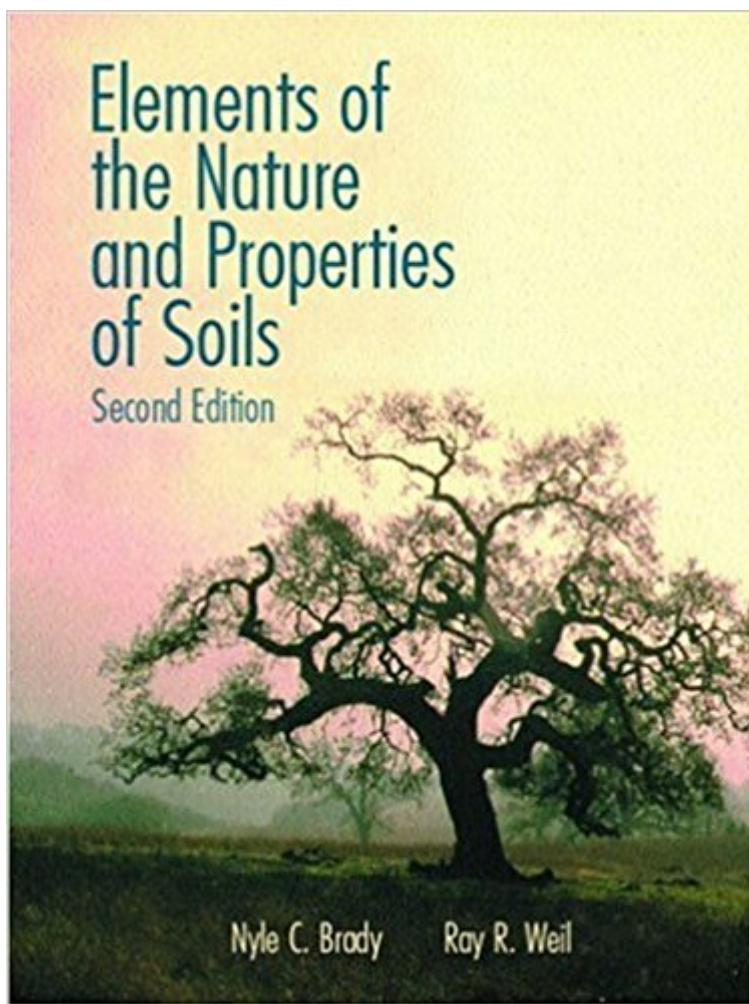


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# Elements Of The Nature And Properties Of Soils (2nd Edition)



## **Synopsis**

Providing information on soils, an important natural resource, this book also presents the principles that can be used to minimize its degradation and destruction. It is useful for undergraduate courses in Introduction to Soils, Fundamentals of Soil Science, and Soil Management, in departments of agronomy, geology or natural resources.

## **Book Information**

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## **Customer Reviews**

A fundamental knowledge of soil science is not only intriguing; it is also a prerequisite to meeting the many natural resource challenges facing humanity in the 21st century. This text addresses all of the basic principles of soil science, emphasizing the soil as a natural resource and highlighting the many interactions between the soil and other components of forest, range, agricultural, wetland, and constructed ecosystems. Elements of the Nature and Properties of Soils, Second Edition, is suitable as the core text in an introductory soil science course at the undergraduate level, providing authoritative and up-to-date coverage that is essential for a solid foundation in the study of soils. It is also an excellent resource for anyone interested in the study of soils. Following are only a few of the topics covered: formation of soils soil classification soil architecture and physical properties soil water soil and the hydrologic cycle soil aeration and temperature the colloidal fraction: seat of soil chemical and physical activity soil acidity, alkalinity, and salinity organisms and ecology of the soil soil organic matter nitrogen and sulfur economy of soil soil phosphorus, potassium, and micronutrients practical nutrient management soil erosion and its control

Like mountains or lakes, soils are both natural bodies in the landscape and ecosystems in their own right. Soils are among our most important natural resources. Soil science therefore lies at the heart of terrestrial ecology; understanding the soil system is key to the success and environmental harmony of any human use of the land. This textbook is designed to help make your study of soils a fascinating and intellectually satisfying undertaking. We are confident that much of what you learn will be of enormous practical value in equipping you to meet the natural resource challenges of the 21st century. Whether your interests lie in forestry, agriculture, ecology, geography, or landscaping, you will soon find that soil science is critical to solving a wide range of problems relevant to these and similar fields. Because soil science integrates concepts from physics, chemistry, geology, and biology, this textbook will provide many opportunities for you to see practical applications for principles from these and other basic sciences. As is the case for its parent book, *The Nature and Properties of Soils*, 13th edition, this newest edition of *Elements of the Nature and Properties of Soils* explains the fundamental principles of soil science in a manner that you will find relevant to your interests. Throughout, the text emphasizes the soil as a natural resource and highlights the many interactions between the soil and other components of forest, range, agricultural, wetland, and constructed ecosystems. We have sought to craft a book that will serve your needs well, whether your reading this textbook is to be your only formal exposure to soil science or you are embarking on a comprehensive soil science education. This new textbook is meant to provide both an exciting, accessible introduction to the fascinating world of soil science and a reliable reference for your professional bookshelf. The parent 13th edition of *The Nature and Properties of Soils* maintains the ecological approach to soil science education characteristic of the two previous editions. This approach helps you understand the many critical ecosystem processes that are centered in the soil and that form the basis of interactions between soils and other ecosystem components such as groundwater, air, streams, and vegetation. This *Elements* version preserves the ecological approach of its parent book, while telling the story of soil science in a more condensed form that some students and professors have found more suitable to their needs. Since 2000, when the first *Elements* edition was published, we have conferred with many students and professors who used the textbook. They told us that they need an updated coverage of soil science principles in approximately 550 pages, rather than the 960 pages of the parent textbook. They also urged that we not diminish either the scientific rigor or the easy readability of the parent book. We have tried to follow their advice. We have been able to limit *Elements* to about 60% of the number of pages in the parent book by rewriting and condensing many sections, by reorienting much of the artwork, and by

reorganizing and reducing application details so as to allow the fundamentals of soil science to be covered in 15 rather than 20 chapters. New to this edition of Elements is expanded coverage of topics that are critically important to the future role of soils in natural resource sciences: wetlands, septic drain fields, salt-affected soils, bioremediation, soil ecology, nutrient and irrigation management, soil hydrology, and new concepts in Soil Taxonomy. This edition includes new sections on the pedosphere concept, nonsilicate colloids, inner and outer sphere complexes, effective CEC, proton balance approach to soil acidity, acid and non-acid cation saturation, human-influenced acidity, Ca and Mg in plants and soils, irrigation water quality, biomolecule binding, soil food web ecology, forest nutrient management, a phosphorus pollution site index, indicators of soil quality, and many other topics of current interest in soil science. In response to their popularity in the previous two editions, we have also added new "boxes" that present either engaging examples and applications or technical details and calculations. These boxes both highlight material of special interest and allow the logical thread of the regular text to flow smoothly without digression or interruption. In addition to updating many references, we have added a new feature to this edition, a set of World Wide Web links printed in the margins of the relevant chapter sections. We could not have done all this without the many valuable suggestions, ideas, and corrections sent to us by soil scientists, instructors, and students from around the world. This edition has once again greatly benefited from such contributions. The high level of professional devotion and camaraderie shared by so many students and practitioners of soil science never ceases to inspire us. We appreciate the comments and suggestions concerning the makeup of this abridged edition made by a number of students and professors who responded to inquiries from the field staff of Prentice Hall. We are especially grateful to Lyle Nelson, Professor Emeritus at Mississippi State University for reviewing the entire text and making excellent and constructive comments. Joyce Torio of the American Chemical Society provided very useful background information on the problems and opportunities affecting global soil quality. In addition, Karen Lowell Langholtz provided able research and editorial assistance for this edition. Special thanks go to the following colleagues who generously reviewed portions of the parent textbook in detail and made valuable suggestions for improvement: Duane Wolf (University of Arkansas); J. Kenneth Torrence (Carleton University); Jessica Davis (Colorado State University); Harold van Es and Martin Alexander (Cornell University); Dan Richter (Duke University); Michael Beug (Evergreen State University); Lee Burras (Iowa State University); Kudjo Dzantor, Delvin Fanning, Robert Hill, Bruce James, Martin Rabenhorst, and Patricia Steinhilber (University of Maryland); Daniel Hillel (University of Massachusetts); Lyle Nelson (Mississippi State University); Jimmie Richardson (North Dakota State University); Darrell Schultze

(Purdue University); Murray Milford (Texas A & M University); Rattan Lal (Ohio State University); Mike Swift (UN Tropical Biology Program); Allen Franzluebbers, Jeff Herrick, Scott Lesch, and Jim Rhoades (USDA Agricultural Research Service); Bob Ahrens, Hari Eswaran, Paul Reich, and Sharon Waltman (USDA/Natural Resources Conservation Service); Fred Magdoff and Wendy Sue Harper (University of Vermont); W. Lee Daniels, S. K. de Datta, and Lucian Zelazny (Virginia Tech.); Clay Robinson (West Texas A & M University); and Tom Siccama (Yale University). Once again, we express our heartfelt thanks to our wives, Martha and Trish, for their encouragement, understanding, and patience without which we could not possibly have found the time and energy required to make such extensive improvements to this textbook. They bear witness to the fact that our effort to continuously improve The Nature and Properties of Soils textbooks is truly a labor of love. &#151; N.C.B. and R.R.W.

I bought this for an intro soil science class. I didn't even open it for the class, but it did come in handy as a reference book when I tried to apply some soil science principles to real-world problems later. Over time, we tend to forget things. So it was very useful to keep this textbook so that I could go look up some basic soil science that I forgot over the summer. It's pretty well organized and easy to understand, as long as you got a B or better in a general chemistry class first.

I am using this textbook for my Soils class. It is easy to read and has lovely pictures to help explain topics. I haven't used it as much as I should for the class, but it is helpful when I do. Which probably means I should probably read it some more... :) I ordered this book in loose-leaf form and it works perfectly. I have it in a binder with my lab manual. Don't be afraid to save money!

I bought this book (\$109, new) for a class on soils and the environment. I will be honest, I did not read the whole book. I read a few chapters. I do know that my professor had issues with one or two of the chapters, (chapter 10?), dealing with microbes (so keep an eye out). That being said, it's not a hardcover book, and is worded so that you can read it with flow (not choppy writing). This is a good book, I wish books were not as expensive. Shipping was great, arrived on time. The class was great, deep learning about the world of Soils.

Soil Science is overly complicated but this book attempts to simplify the subject matter.

I'm happy with the amount of info!

book is informative but highly disappointed that it only has 5 colored pages. Do not understand how a soils book is in black and white.

College class- as described

The detailed outlay of the book is very enlightening and thorough in its approach to deliver knowledge regarding many things, 'soil'. I have learned a treasure load of goodies from this book regarding the science of soil and other practical implications as well.

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