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Second Edition

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FOREWORD

Our understanding of the nature, causes, and management of soil acidity continues on the "upward, spiralling merry-go-round" so elegantly described by Hans Jenny in 1961. It is good that it does. Only by properly managing our soils can we be assured of plentiful supplies of food, fiber and shelter, and a clean and healthy environment.

Excessive soil acidity is a continuing problem in many agricultural areas and is increasingly becoming a yield-limiting factor in other areas. The pH of soils of the dryland wheat-growing area of the Pacific Northwest has dropped an average of one unit in the last 20 years. Similar effects are reported from other areas and even more dramatic changes are observed in the surface layers of minimum-tilled fields. Greater understanding and appreciation of these long-term, agriculturally intensified reactions are essential to maintain optimal fertility of our soils.

The factors of acid soil fertility and crop responses to acid soils are complex. Not all acid soils need lime, nor should all lime-responsive soils be brought to the same pH. Soil tests for lime requirement must be selected and calibrated to provide for the differences among soils and among the crops to be grown on them. This monograph highlights knowledge in these and other areas and points out the many challenges that lie ahead. It, as its predecessor, will serve as a benchmark from which future progress can be established.

On behalf of the membership of ASA, CSSA, and SSSA, we express our appreciation to the editor and the authors for their important functions leading to this publication. We acknowledge the help of our society members who reviewed the manuscripts. We are also grateful to the Headquarters staff for editorial and production efforts that allowed this volume to be a reality.

April 1984

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PREFACE

The first edition of *Soil Acidity and Liming* (published in 1967) was developed and written in response to the need for a reference text on an important, worldwide, agricultural topic. It covered topics ranging from basic chemical concepts to soil acidity to the practical usage of agricultural liming materials. The text was intended to serve as a source of information for agronomists, horticulturists, and others who are interested in efficient crop production on acid soils.

Knowledge about soil acidity and its effects on plant growth and crop production has continued to expand. The basic tenets of acid soil chemistry have not changed during the last 2 decades, but additions and modifications of concepts involving the chemistry of solution aluminum make updating of this topic highly desirable. Significant advances have been made in identifying the role in plant nutrition of elements responsible for acid soil infertility, in particular the effects of too much aluminum and too little calcium.

The relative importance of different crops produced on the acid soils of the United States has changed markedly during the last 30 years. Concurrently, plant breeders have initiated programs to develop cultivars of increasing tolerance to acid soils. Cropping systems have also changed, including the adoption of no-till practices in some areas. These changes have affected liming practices and have created a need for continuing field research so that liming recommendations are updated for new practices.

The intent of the editor and authors of the revised edition of *Soil Acidity and Liming* was to maintain the concept of a reference text on soil acidity, one that is suitable for those involved in research, both soils and plants, and as a supplemental text for graduate students. The edition was expanded to include a chapter on tropical acid soils, an area of increasing concern and interest. A key feature of the text is an effort to explain soil chemical properties and physiological responses of plants. This text was never intended to be a mere catalog of reported data in the literature; authors, instead, have striven to offer interpretations wherever possible.

March 1984

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