Sustainability of agricultural systems is a major global concern due to population growth and a number of environmental factors. This book addresses the key to the development of sustainable agriculture—management of soil fertility. Combining data from temperate and tropical regions, it presents a complete picture of how various soils can best be managed under widely different environmental conditions. *Soil Fertility Management for Sustainable Agriculture* is an excellent reference for environmental and agricultural professionals as well as a textbook for undergraduate and graduate students preparing for a career in agriculture or soil fertility management.

Contents

- Introduction
- Sustainable Agriculture: Definitions and Goals
- Factors Determining Sustainability
- Soil Fertility
- Essential Plant Nutrients
- Criteria for Essentiality
- Basis for Classification of Nutrients as Primary, Secondary, and Micronutrients
- Primary Nutrients, Secondary Nutrients, and Micronutrients
- Functions of Essential Nutrients in Plants
- Soil the Sustainer
- Soil Organic Matter
- Soil Water
- Soil Air
- Soil Mineral Matter
- Soil Colloids
- Soil Living Organisms
- Soil Colloids
- Clay Minerals
- Oxide Minerals
- Organic Matter
- Humus, Its Structure and Properties
- C:N Ratio
- Factors Affecting the Organic-Matter Content of Soils
- Soil Acidity
- Acids
- The pH Concept
- Determination of Soil pH
- Active and Potential Acidity
- Buffering Capacity
- Nature of Soil Acidity
- Factors Affecting Soil Acidity
- Soil pH and Crop Production
- Lime Requirement
- Liming Materials
- Fineness of Limestone
- Soil Salinity and Sodicity
- Coverage and Special Features
Deficiency Symptoms in Plants

Copper and Zinc Fertilizers
Boron and Molybdenum
Boron
Molybdenum
Chlorine
Chlorine in Soils
Addition of Chlorine to Soils
Testing Soils for Chlorine Deficiency
Chlorine Deficiency Symptoms
Chlorine Toxicity Symptoms
Interactions with Other Nutrients
Chlorides and Plant Diseases
Crop Responses to Chloride Fertilization
Chloride Fertilizers
Beneficial Elements
Sodium
Silicon
Cobalt
Nickel
Aluminum
Vanadium, Lanthanum, and Cerium
Nutrient Interactions
Interactions
Interactions of Primary Macronutrients
Interactions of Micronutrients
Organic Manures
Crop Residues
Animal Manures
Composting
Organic Farming
Integrated Nutrient Management
Cropping Systems, Soil Fertility, and Fertilizer Use
Legumes in Crop Rotations
Intercropping Systems
Intensive Cropping Systems and Soil Fertility
Fertilizer Application in Cropping Systems
Index