

# CONTENTS

## Preface

## PART I GENESIS AND CLASSIFICATION

|                                                                                                                                              |     |
|----------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Characterization of Red and Yellow Colored Soil Materials in<br>Southwestern Japan<br><i>Shigeru Araki and Kazutake Kyuma</i> .....          | 3   |
| Red Soils in the Americas: Morphology, Classification<br>and Management<br><i>S.W. Buol and P.A. Sanchez</i> .....                           | 14  |
| Micromorphology of Red Soils in China<br><i>Cao Sheng-geng</i> .....                                                                         | 44  |
| The Distribution, Properties and Management of Acid<br>Mineral Soils in Tropical South America<br><i>Thomas T. Cochrane</i> .....            | 77  |
| Oxisols of the World<br><i>H. Eswaran; H. Ikawa and J.M. Kimble</i> .....                                                                    | 90  |
| Biogeochemistry of Red Weathering Crust in China<br><i>Gong Zi-tong</i> .....                                                                | 124 |
| Identification and use of Subtypes of the Argillic Horizon<br><i>W.G. Sombroek</i> .....                                                     | 159 |
| Red Soils of Central Africa<br><i>R. Tavernier and C. Sys</i> .....                                                                          | 167 |
| The Use of Soil Climatic Data in Soil Taxonomy with<br>Special Reference to the Tropics<br><i>A.V. Wambeke</i> .....                         | 185 |
| On the Genesis, Classification and Characteristics of the<br>Soils in Tropical and Subtropical China<br><i>Zhao Qi-guo and Shi Hua</i> ..... | 197 |

## PART II PROPERTIES

|                                                                             |     |
|-----------------------------------------------------------------------------|-----|
| Adsorption Characteristics of Red Soils in China                            |     |
| <i>Chen Jia-fang</i> .....                                                  | 231 |
| Cation Retention in Red Soils of the Tropics                                |     |
| <i>G.P. Gillman and Yu Tian-ren</i> .....                                   | 251 |
| Effects of Organic Matter on the Properties of Some Red Soils               |     |
| <i>D.J. Greenland</i> .....                                                 | 262 |
| Microbes in Red Soils in China                                              |     |
| <i>Hao Wen-ying and Cao Zheng-bang</i> .....                                | 274 |
| Surface Charge Characteristics of Red Soils                                 |     |
| <i>Goro Uehara</i> .....                                                    | 286 |
| Charge Characteristics of a Typic Gibbsium and a<br>Hydric Dystrandept      |     |
| <i>Li Xue-yuan</i> .....                                                    | 294 |
| On the Content and Characteristics of Soil Organic Matter<br>in South China |     |
| <i>Wen Qi-xiao and Lin Xin-xiong</i> .....                                  | 309 |
| Mineralogy of Tropical and Subtropical Soils in China                       |     |
| <i>Xu Ji-quan, Jiang Mei-ying, Yu Suo-fu and Yang De-yong</i> .....         | 330 |
| Physical Properties of Red Soils                                            |     |
| <i>Yao Xian-liang</i> .....                                                 | 377 |
| Physico-chemical Properties of Red Soils of China                           |     |
| <i>Yu Tian-ren and Zhang Xiao-nian</i> .....                                | 409 |

## PART III MANAGEMENT

|                                                                                                                                                   |     |
|---------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Nitrogen Fertilizers for the Tropics                                                                                                              |     |
| <i>Orvis P. Engelstad</i> .....                                                                                                                   | 445 |
| Phosphate-Fertilizer Requirements of Weathered Soils and<br>Residual Phosphate Fertilizer Efficiency as Indicated<br>by Phosphate Sorption Curves |     |
| <i>Robert L. Fox and Li Xue-yuan</i> .....                                                                                                        | 468 |
| Forms and Transformation of Soil Phosphorus and the<br>Effective Application of Phosphate Fertilizers in<br>the Red Soil Region of China          |     |
| <i>Jiang Bai-fan, Lu Ru-kun and Li Ching-kwei</i> .....                                                                                           | 479 |

|                                                                                                                                                             |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Red Soils of the Semi-Arid Tropics—Problems, Potentials<br>and Management<br><i>J.S. Kanwar</i> .....                                                       | 504 |
| Degradation of Properties of Red Brazilian Subtropical<br>Soils by Management<br><i>E. Klamt, J. Mielniczuk and P. Schneider</i> .....                      | 523 |
| Soil Surface Management for Erosion Control and Water<br>Conservation<br><i>R. Lal</i> .....                                                                | 543 |
| Fertilizer Application, Food Production and Changes<br>of Soil Fertility Through 30 Years' Land<br>Utilization in South China<br><i>Li Ching-kwei</i> ..... | 660 |
| Trace Elements in Tropical and Subtropical Soils of China<br><i>Liu Zheng, Zhu Qi-qing and Tang Li-hua</i> .....                                            | 576 |
| Exploitation of China's Tropical Regions and Suitable<br>Soil Conditions for Rubber Cultivation<br><i>Lu Xing-zheng and Huang Zong-dao</i> .....            | 609 |
| Land Use of Mountain and Hill Areas in Subtropical Red<br>Earth Zone<br><i>Luo Ru-ying and He Dian-yuan</i> .....                                           | 644 |
| Characterization and Management of Reddish-Colored<br>Tropical Soils<br><i>Masanori Miyake</i> .....                                                        | 662 |
| Soil Erosion and Its Control in Red Soil Region of China<br><i>Shi De-ming</i> .....                                                                        | 678 |
| The Condition and Status of Soil Potassium and the<br>Application of Potassium Fertilizer in Red<br>Earth Regions of China<br><i>Xie Jian-chang</i> .....   | 700 |

## Appendix

|                                                                                                 |     |
|-------------------------------------------------------------------------------------------------|-----|
| Examined Soil Profiles in Red Soil Region of China during<br>the Post-Symposium Excursion ..... | 723 |
|-------------------------------------------------------------------------------------------------|-----|