Carbon Forms and Functions in Forest Soils
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DEDICATION

Charles (Chuck) B. Davey, Professor Emeritus, North Carolina State University, has had a distinguished career in forest soils. Since receiving his Ph.D. from the University of Wisconsin in 1955, he has directed the work of 50 some graduate students, been named outstanding teacher, served as President of the Soil Science Society of America, been consultant to forestry organizations in ten countries, produced over 120 refereed publications and been a prominent leader among forest soil scientists. We are proud to dedicate this volume to an effective educator, distinguished scientist, and esteemed colleague.

Charles (Chuck) B. Davey
CONTENTS

Dedication............................................................................................................ v

Foreword............................................................................................................. xi

Preface.............................................................................................................. xiii

Contributors....................................................................................................... xv

1 Soil Organic Matter: Clue or Conundrum?
   Richard F. Fisher............................................................................................. 1

2 Forest Soil Organic Matter: Characterization and Modern Methods of Analysis
   John G. McColl and Noam Gressel............................................................... 13

3 Fractionation of Soil Organic Matter with Supercritical Freon
   Felipe G. Sanchez and Gregory A. Ruark.................................................... 33

4 The Influence of Low-Molecular-Weight Organic Acids on Properties and Processes in Forest Soils
   Thomas R. Fox............................................................................................... 43

5 Characterization of Dissolved and Colloidal Organic Matter in Soil Solution: A Review
   Bruce E. Herbert and Paul M. Bertsch.......................................................... 63

6 Chemistry of Carbon Decomposition Processes in Forests as Revealed by Solid-State Carbon-13 Nuclear Magnetic Resonance
   J.A. Baldock and C.M. Preston...................................................................... 89

7 Management-Induced Changes in the Actively Cycling Fractions of Soil Organic Matter
   B.H. Ellert and E.G. Gregorich..................................................................... 119

8 Long-Term Changes in Organic Matter in Soils Receiving Applications of Municipal Biosolids
   Robert B. Harrison, Charles L. Henry, Dale W. Cole, and Dongsen Xue........................................................................................................... 139
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>Soil Carbon, Soil Formation, and Ecosystem Development</td>
<td>Keith Van Cleve and Robert F. Powers</td>
<td>155</td>
</tr>
<tr>
<td>10</td>
<td>Soil Organic Carbon in the Missouri Forest-Prairie Ecotone</td>
<td>R. David Hammer, Gray S. Henderson, Ranjith P. Udawatta and Donna K. Brandt</td>
<td>201</td>
</tr>
<tr>
<td>12</td>
<td>Toward a New Theory of Podzolization</td>
<td>Bryant A. Browne</td>
<td>253</td>
</tr>
<tr>
<td>14</td>
<td>Role of Carbon in the Cycling of Other Nutrients in Forested Ecosystems</td>
<td>Dale W. Johnson</td>
<td>299</td>
</tr>
<tr>
<td>15</td>
<td>Carbon Controls on Spodosol Nitrogen, Sulfur, and Phosphorus Cycling</td>
<td>Mark B. David, George F. Vance, and Anna J. Krzyszowska</td>
<td>329</td>
</tr>
<tr>
<td>16</td>
<td>Carbon and Nitrogen Cycling within Mid- and Late-Rotation Jack Pine</td>
<td>Neil W. Foster, Ian K. Morrison, Paul W. Hazlett, Gary D. Hogan, and Maria I. Salerno</td>
<td>355</td>
</tr>
<tr>
<td>17</td>
<td>Carbon Chemistry and Nutrient Supply in Cedar–Hemlock and Hemlock–Amabilis Fir Forest Floors</td>
<td>Cindy E. Prescott, L.E. Demontigny, C.M. Preston, Rodney J. Keenan, and Gordon F. Weetman</td>
<td>377</td>
</tr>
<tr>
<td>18</td>
<td>Belowground Responses to Atmospheric Carbon Dioxide in Forests</td>
<td>Richard J. Norby, E.G. O’Neill, and Stan D. Wullschleger</td>
<td>397</td>
</tr>
<tr>
<td>19</td>
<td>Soil Organic Matter: A Link Between Forest Management and Productivity</td>
<td>Gray S. Henderson</td>
<td>419</td>
</tr>
<tr>
<td>20</td>
<td>Soil Carbon in Northern Forested Wetlands: Impacts of Silvicultural Practices</td>
<td>Carl C. Trettin, Martin F. Jurgensen, Margaret R. Gale, and James W. McLaughlin</td>
<td>437</td>
</tr>
<tr>
<td>Chapter</td>
<td>Title</td>
<td>Authors</td>
<td>Page</td>
</tr>
<tr>
<td>---------</td>
<td>-------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>21</td>
<td>Carbon Dynamics Following Clear-Cutting of a Northern Hardwood Forest</td>
<td>Chris E. Johnson, Charles T. Driscoll, Timothy J. Fahey, Thomas G.</td>
<td>463</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Siccama, Jeffery W. Hughes</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Distribution of Carbon in a Piedmont Soil as Affected by Loblolly Pine Management</td>
<td>D.H. Van Lear, P.R. Kapeluck, Melissa M. Parker</td>
<td>489</td>
</tr>
<tr>
<td>23</td>
<td>The Role of Forest Soils in the Global Carbon Cycle</td>
<td>Alex F. Bouwman, Rik Leemans</td>
<td>503</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Van Miegroet</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Modeling Carbon and Nitrogen Dynamics in Western Red Cedar and</td>
<td>Rodney J. Keenen, J.P (Hamish) Kimmins, John Pastor</td>
<td>547</td>
</tr>
<tr>
<td></td>
<td>Western Hemlock Forests</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Carbon and Nitrogen Dynamics in Oak Stands along an Urban-Rural Gradient</td>
<td>Richard V. Pouyat, Mark J. McDonnell, S.T.A. Pickett, Peter M.</td>
<td>569</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Groffman, M.M. Carreiro, Robert W. Parmelee, Kimberly E. Medley,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>W.C. Zipperer</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>A Perspective on the Evolution of Forest Soil Science</td>
<td>Robert F. Chandler, Jr.</td>
<td>589</td>
</tr>
</tbody>
</table>
FOREWORD

There is a renewed public awareness of the importance of forests and forest lands for agriforestry, biodiversity, ecosystem management, global climatic change, resource conservation, timber production, wildlife habitat, recreation, and sustainability of the biosphere. The balance between societal needs and utilization of forest resources is a continuing public debate. This publication serves a critical niche in capturing the state of knowledge on forest soils relative to several of the above national and international priorities. It targets organic matter and the role of carbon and nitrogen cycling as driving functions of forest ecosystems. Further, the publication forges a bridge and continued synergistic interaction among forest science professionals of North America.

The sponsors, editors, and authors are to be commended for their individual and collective efforts in bringing this publication to fruition. It provides a valuable treatise at a time when the public mandates increased sensitivity and attention to sustainability of the biosphere.

LARRY P. WILDING, President
Soil Science Society of America
PREFACE

Forest productivity and the factors which influence it have been the underlying theme uniting the seven previous North American Forest Soil Conferences which have occurred at 5-year intervals since the series was initiated in 1958. While that theme continues into this eighth conference, the focus has been directed to the single factor that in many ways describes, defines, and delineates the study of forest soils as a unique niche in the broader continuum of soil science.

In their preface to the proceedings of the third North American Forest Soils Conference C. T. Youngberg and C.B. Davey noted that “the growth of the tree and the productivity of the forest are directly affected by the quantity, quality and location of the soil.” Soil carbon in its myriad forms, perhaps as no other factor, influences soil-plant relationships through its direct and indirect impacts on mineral solubility, exchange capacity, nutrient availability, moisture supply, aggregate formation, and soil erosion. Hans Jenny, in his classic equation describing the factors of soil formation, placed organic matter in a pivotal role in the development of the soil and soil properties as well as the succession of associated plant communities.

Since the previous conference many changes in our approach to the management and preservation of the forest resource have occurred. Most significant of these developments has been the growing emphasis placed on understanding and manipulating forests as ecological units. Paralleling and to some extent driving this move toward an ecological focus has been the renewed realization of the important and dynamic nature of the interaction between the physical and biological resources. The role of forest soils, as well as the aboveground portion of the forest, as significant buffers against the impacts of anthropogenic activities on atmospheric carbon dioxide and the earth’s energy balance has driven home the necessity of continuing to develop and refine our knowledge of the interactions of soils, plants, and the environment in which they exist.

Three generations of forest soil scientists have now contributed to these volumes. During that time our knowledge has continued to expand and gain clearer focus. These gains have been the result of the collective work and interaction of the individual researcher and the peer community. Each of us has played a role in this procession and realizing that there is much yet to be done, it seems only appropriate that we collect our thoughts at these five year intervals and celebrate our accomplishments.
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