Crop Residue Management Systems
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Contents

Foreword
J. W. Pendleton, V. A. Johnson, and P. F. Pratt ........... v

Preface
W. R. Oschwald .......................................... vii

1 Residues for Soil Conservation

2 Crop Residue Requirements to Control Wind Erosion
E. L. Skidmore and F. H. Siddoway ................. 17

3 A Guide for Determining Crop Residue for Water
Erosion Control
William A. Hayes and Leon W. Kimberlin .......... 35

4 Effect of Residue Management Practices on the Soil
Physical Environment, Microclimate, and Plant Growth
D. M. Van Doren, Jr. and R. R. Allmaras ........ 49

5 Effect of Crop Residues on the Soil Chemical Environment
and Nutrient Availability
J. F. Power and J. O. Legg ............................ 85

6 Factors Affecting the Decomposition of Crop Residues
by Microorganisms
J. F. Parr and R. I. Papendick ...................... 101

7 Phytotoxicity Associated with Residue Management
L. F. Elliott, T. M. McCalla, and A. Waiss, Jr. ....... 131

8 Influence of Crop Residues on Plant Diseases
R. J. Cook, M. G. Boosalis, and B. Doupnik .......... 147

9 Weed Control Problems Associated with Crop Residue
Systems
J. L. Williams, Jr. and G. A. Wicks ................. 165
<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Effect of the Crop Residue System on Pest Problems in Field Corn (Zea mays L.) Production</td>
<td>G. J. Musick and L. E. Beasley</td>
<td>173</td>
</tr>
<tr>
<td>11</td>
<td>Crop Residue Management in Crop Rotation and Multiple Cropping Systems</td>
<td>G. B. Triplett, Jr. and J. V. Mannering</td>
<td>187</td>
</tr>
<tr>
<td>12</td>
<td>Crop Selection for Specific Residue Management Systems</td>
<td>W. E. Kronstad, W. L. McQuistion, M. L. Swearingin, and C. O. Qualset</td>
<td>207</td>
</tr>
<tr>
<td>13</td>
<td>Alternative Uses of Excess Crop Residues</td>
<td>E. Epstein, J. E. Alpert, and C. C. Calvert</td>
<td>219</td>
</tr>
<tr>
<td>14</td>
<td>Machinery Selection for Residue Management Systems</td>
<td>J. C. Siemens and W. C. Burrows</td>
<td>231</td>
</tr>
<tr>
<td></td>
<td>Summary</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Foreword

The management of croplands has a large impact on the quantity and quality of food and fiber production and on air and water quality, all of which influence the quality of our environment. Management of the nonharvested plant tissues, such as leaves, stems, branches, and roots that constitute the residues from the production of food and fiber, is one of the farm practices that affects crop production via nutrient availability and cycling. Management of these residues also provides opportunities for control of dust in the air and sediments and nutrients in waters through control of soil erosion caused by wind and water.

Thus, the task ahead for the management of croplands for improvements in the overall well-being of people involves the application of known effective crop residue management systems to maintain crop production and to reduce wind and water erosion. There is need, as well, for development of more effective management systems through laboratory and field research.

The editorial committee of this volume enlisted a group of outstanding scientists to bring together under one cover their knowledge of science and practice in crop residue management. The publication of Crop Residue Management Systems by the American Society of Agronomy, the Crop Science Society of America, and the Soil Science Society of America is in keeping with their goal of disseminating knowledge and technology for the improvement of the total environment of man through the quality and quantity of food and fiber production and the quality of air and water.

J. W. Pendleton, President
American Society of Agronomy

V. A. Johnson, President
Crop Science Society of America

P. F. Pratt, President
Soil Science Society of America
Preface

Crop residues are the portions of a crop that are left in the field after harvest. These crop materials have at times been regarded as waste materials that require disposal before producing a new crop. At other times, the crop materials are considered as a resource. From a conservation perspective, crop residue management is the use of crop residues for soil protection or improvement (Resource Conservation Glossary. 1976. Soil Conservation Society of America, Ankeny, Iowa). Additional uses of crop residues are possible, i.e., as livestock feed or as a fossil fuel substitute. Large scale uses of crop residue for feed or fuel would reduce the quantity of crop residues for soil protection and improvement.

The American Society of Agronomy, the Crop Science Society of America, and the Soil Science Society of America sponsored a crop residue management symposium at the 1976 annual meetings of these societies in Houston, Tex. The objectives of the symposium were (i) to review the role and need for crop residues in resource conservation, environmental protection, and soil productivity; (ii) to review crop residue induced physical-chemical-biological effects on the soil-plant environment, plant growth, and crop protection; and (iii) to explore residue management in relation to crop selection, crop rotations, and alternative use of residues. Fourteen papers were devoted to topics related to these objectives. These papers are published in Crop Residue Management Systems which is the proceedings of the symposium.

The objective of Crop Residue Management Systems is to provide a current, coherent, and complete evaluation of the factors involved in the use of crop residues for resource conservation and productivity, for livestock feed, and as a fossil fuel substitute. Crop Residue Management Systems presents multidisciplinary viewpoints of revelant cause and effect relationships and related problems associated with alternative uses of crop residues. It also presents an assessment of the technology needed in the use and management of crop residues for alternative uses. The publication includes a wide spectrum sampling of the relevant literature, but it’s more than a literature review in that new concepts and approaches are articulated.

ACKNOWLEDGMENTS

Crop Residue Management Systems is the result of the efforts of many people. First and foremost, the authors of the papers have responded to the objectives specified by the organizers of the symposium.
and to the suggestions of the editorial committee. They have employed a high degree of professional competence in developing the papers. Dr. R. R. Allmaras provided overall leadership in the symposium and in the initiation of the publication. The symposium committee of Dr. Robert I. Papendick, Chairman; Dr. James F. Parr; and Dr. Jerry V. Mannering effectively provided planning for and conduct of the symposium. Dr. William Lewis, Dr. Howard Taylor, Dr. Fred Welch, and Dr. Paul Unger provided valuable editorial assistance. Ms. Judy Nauseef provided editorial expertise in converting the manuscripts into published papers. The assistance of my secretary, Mrs. Ruby Straker, in handling the correspondence, telephone contacts, etc. was invaluable and is recognized and appreciated.

W. R. Oschwald
Editor