

Organic Farming: Current Technology and Its Role in a Sustainable Agriculture

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Foreword

As the human population has exploded during the past half century, agricultural production has been intensified through the abundant use of inorganic fertilizer, the practice of monoculture or two-crop rotations, and the liberal use of chemical pesticides. Some argue that such a system of production is not sustainable because it leads to degradation of the Earth's environment. They offer organic farming as an alternative. Undoubtedly, human survival depends on agricultural production being increased and the Earth's environment being sustained. Whether agriculture production will continue to employ the present intensive system, move to organic farming, or use a mix of the two, will have important overtones on the billions who will occupy the Earth in the next century and beyond.

In this special publication, most aspects of organic farming are discussed. Meeting crop N and other nutrient needs from organic sources is a major topic of discussion; reducing soil erosion and nutrient loss via rotations and minimal tillage are treated thoroughly; minimizing the use of chemical pesticides and decreasing energy inputs are subjects examined; and the economic impact and socio-political implications of organic farming are presented.

The American Society of Agronomy, the Crop Science Society of America, and the Soil Science Society of America are pleased to have been the sponsors of this symposium on Organic Farming. This publication, which is a record of the symposium proceedings, should be a focal point and knowledge base for discussions on agricultural production systems that will provide abundant food, feed, and fiber while sustaining, and perhaps improving, the agricultural production base and the Earth's environment.

K. J. Frey, President
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W. F. Keim, President
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Preface

Recent concerns about increased cost and reduced availability of fossil fuels, improved human nutrition, and environmental degradation have prompted agronomists to reevaluate our current agricultural practices. As a part of this reevaluation, a symposium was held at the 1981 American Society of Agronomy annual meetings in Atlanta, Ga. to investigate alternative production methods that might be employed in agriculture to either reduce production costs, improve crop quality, or reduce potential environmental damages. Since many of these alternatives involve the substitution of biological mechanisms for chemical or mechanical inputs, they are collectively called "Organic Farming" methods, although other definitions could be appropriate. This Special Publication is a collection of the papers presented at this symposium on Organic Farming.

Organic farming is a method of crop production that has been employed throughout the history of mankind. However, as with all agricultural systems, continual modification and change in practices occur as new materials become available, as economic conditions change, or with an increase in scientific knowledge. The objective of this symposium was to summarize the present state of knowledge of various biological systems of crop production, and to identify subjects for which scientific knowledge is lacking. With such knowledge, agronomists and soil scientists can better select production methods, orient research, and develop production systems that meet the requirements of society today and in the future.

This symposium was organized by L. F. Elliott (Chairman), R. H. Miller, and J. J. Mortvedt. The Organizing Committee obtained contributions from a number of the leading authorities on various aspects of organic farming from throughout the world, as well as relevant information from a number of other sources. The Editorial Committee, composed of D. F. Bezdicek and J. F. Power, cochairmen, and D. R. Keeney and M. J. Wright, wishes to thank Dr. Elliott and the Organizing Committee for the excellent job they did.

D. F. Bezdicek and J. F. Power (Editors)