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The use of commercial nitrogen as a fertilizer has increased markedly during the past two decades. Authorities predict that this trend will likely be accelerated in the years ahead. Today, essentially all fertilizer nitrogen is derived from synthetic anhydrous ammonia. In fact, in the USA, more nitrogen is applied as anhydrous ammonia than from any other one source.

Although anhydrous ammonia is directly used as such in agriculture in large tonnages and as a "building block" for other nitrogen carrying fertilizers, pertinent information on this product and its uses in agriculture has not been assembled in one volume. Recognizing the need for an up-to-date reference volume, the Agricultural Ammonia Institute, in cooperation with the American Society of Agronomy and the Soil Science Society of America, sponsored an Anhydrous Ammonia Symposium in St. Louis, Missouri, on September 29 and 30, 1965.

The Planning Committee, composed of members of the AAI's Agronomy Committee, was appointed to select topics to be discussed and to enlist the cooperation of outstanding authorities in preparing manuscripts and presenting the papers at the Symposium.

The Program and Editorial Committee consisted of W.P. Martin, representing the ASA and SSSA, and Ivan E. Miles, H. H. Tucker, and Malcolm H. McVickar, Chairman, representing the AAI. Zenas Beers, AAI Executive Vice President, and Matthias Stelly, ASA-SSSA Executive Secretary, were ex-officio members of the Committee.

The interest and cooperation on the part of all who were asked to participate, as evidenced by the distinguished list of contributors, was most gratifying. The editors gratefully acknowledge the splendid cooperation of the contributors in preparing their manuscripts so as to reduce editorial work to a minimum. They especially appreciate the promptness with which the authors returned their revised manuscripts incorporating the suggestions of the Editorial Committee.

Special acknowledgement is also due the AAI Staff, to Zenas Beers in particular, for their valuable assistance to the Committee in planning and conducting the Symposium. Special thanks are also given to the ASA and SSSA Staffs, especially to Mrs. Roberta Messer, for their assistance in editing and printing of this volume.

The Editorial Committee,
Malcolm H. McVickar, Chairman
W. P. Martin
Ivan E. Miles
H. H. Tucker
Among recent trends in agriculture and agricultural sciences and industries, two have special significance in relation to this Symposium and these published proceedings. These two trends are:

1) Science and research information are respected more and more by farmers as guides for their plans and decisions;

2) Industry representatives share more and more with university extension personnel the responsibility for making available this science and research information to farmers.

Therefore, if agriculture is to meet its challenges and responsibilities, universities and industry need to recognize their mutual contributions and responsibilities. The joint participation in this Symposium on Agricultural Anhydrous Ammonia Technology and Use and the joint publication of these proceedings by the Agricultural Ammonia Institute, the American Society of Agronomy, and the Soil Science Society of America are concrete evidence of such recognition.

It is altogether fitting that the AAI assumed the initiative in planning and presenting the Symposium with the cooperation of the two Societies and that these proceedings are a joint publication of all three groups. The Societies, through their headquarters staff and Mrs. Roberta Messer, have taken the leadership in preparing the manuscripts for publication and acting as agent with the printers.

We expect that this joint presentation of the best known information on anhydrous ammonia and its use in agriculture will increase the reader's understanding of the product, enabling him to utilize its full value in crop production. And we believe that the cooperation and understanding encouraged by this venture will lead to additional joint activities to the benefit of agriculture and of the agricultural sciences and industries.

Zenas H. Beers
Executive Vice President
Agricultural Ammonia Institute

Matthias Stelly
Executive Secretary
American Society of Agronomy and
Soil Science Society of America
forewords

The Agricultural Ammonia Institute is very pleased to have sponsored the Symposium recorded in this book. We are grateful to the American Society of Agronomy and the Soil Science Society of America for cooperating. By their support, these organizations have contributed greatly to the prestige of this Symposium.

The purpose of the Symposium was to present important scientific information about ammonia, covering the whole subject as fully as practical within the limits of time and available information. These published proceedings of the Symposium will be widely distributed and used.

Among the benefits to be derived from this Symposium are these:

Much of the current important information on the subject of ammonia is compiled and published and will be useful in teaching and as a reference.

Attention will be focused on the need for certain additional information as a result of reviewing what is presently known.

Ammonia, the product, and the agricultural ammonia industry itself will be better established with the scientific community.

As president of the AAI, it was my privilege and my pleasure to welcome participants and guests to the Symposium and now to commend to you this published text of the proceedings.

Nelson Abell, President
Agricultural Ammonia Institute

The advanced technology that has resulted in the phenomenal increase in efficiency of agricultural production in the USA during the past two decades is a direct result of the joint efforts of dedicated workers in research, education, and industry. These groups have many interests in common, emphasizing the importance of maintaining effective communication among them. Jointly sponsored symposia and conferences on topics of current mutual interest provide one of the most effective mechanisms for information exchange. It is fitting, therefore, that the Soil Science Society of America and the American Society of Agronomy should join the Agricultural Ammonia Institute to cosponsor a symposium on anhydrous ammonia and to publish the proceedings of this conference.

This Symposium was planned in early 1965 for the purpose of bringing together the available facts and principles relating to the effective use of anhydrous ammonia in agriculture. The participants are recognized authorities in their respective subject matter areas. We feel certain that their comprehensive treatments of the various aspects of anhydrous ammonia in agriculture will make this book a useful reference for the industrial and research worker as well as the teacher.

Robert W. Pearson, President
Soil Science Society of America
L. A. Richards, President
American Society of Agronomy
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