THE NITROGEN PROBLEM IN SOIL MANAGEMENT

F. W. PARKER

Nitrogen is the most commonly deficient nutrient in the arable soils of the world. Wherever crops are harvested there is a problem of providing an adequate nitrogen supply. It is a problem on the alluvial soils of the Nile, the Ganges, and the Mississippi; the irrigated soils of Asia and western United States; the soils of the tropics, the coastal plains, and prairies. We may ignore the problem as is done in many places and take the consequences in declining yields and soil depletion. We should, however, adopt soil management practices to provide the nitrogen required at the right time and in the amount needed for efficient crop production.

The nitrogen problem engaged the attention of the early agricultural scientists of Europe and America. A large part of the early work of Rothamsted was directed to the study of nitrogen. From early days to the present, one of the major purposes of liming and mineral fertilization was to introduce nitrogen into the rotation through the growth of legumes. Only within the last century have chemical nitrogen fertilizers been used to supplement the nitrogen from the soils, legumes, and manures. Within the last 25 years a world nitrogen industry has developed and world consumption of chemical nitrogen fertilizers increased from 720,000 tons nitrogen in 1913 to 2,766,000 tons in 1937. The recent war caused an expansion of the industry in some countries and its destruction in others. As the world emerges from the war facing a food shortage, great agricultural countries, China, India, East Indies, and Egypt, are building or plan to build plants for the production of nitrogen fertilizers as one means of increasing food production and raising living standards.

1Presidential address delivered at the annual meeting of the American Society of Agronomy in Columbus, Ohio, February 28, 1946.
2Assistant Chief of Bureau of Plant Industry, Soils, and Agricultural Engineering, U. S. Dept. of Agriculture.
3In this connection it is of interest to note that one-half of the prewar world production of nitrogen fertilizers was in Germany, Italy, and Japan, including Korea and Manchuria. With most of that capacity destroyed or shut down we should not be surprised at the acute world shortage of nitrogen. The slow conversion of our war plants to fertilizer production has not helped the situation. The net result is a world shortage of almost a million tons of nitrogen for the current season.