Prior to 1945 relatively little research had been done in the southeastern USA on response of crops to S. Sulfur needs were met through the use of ordinary superphosphate which was the main source of phosphorus in mixed fertilizers. As a result, little attention was given to the S status of soils and plant requirements for S. However, in the late 1940’s concentrated superphosphate was being introduced and agronomists started research on how this would affect the need for S. These early studies indicated that yields of cotton, clovers, and tobacco were increased when S was included in the fertilizers (Jordan, 1964).

As a result of these initial findings a Southern Regional Sulfur Project was started in 1952 to study the S status of soils, the S brought down in rainfall, and the S requirement of the major crops in the region. When S-free fertilizers were used in the southern region yields had declined on almost two-thirds of sites at the end of 7 yr (Jordan, 1964). In the first year of the study there were no yield responses, but in succeeding years deficiencies became more prevalent. The results of the Regional Sulfur Project clearly showed that if high crop yields are to be obtained in the southern USA, consideration must be given to ensuring that an adequate supply of S is available to the crop.

I. SOIL SULFUR SUPPLIES AND AVAILABILITY

A. Sulfur Supplies in Ap Horizon

1. Organic S

Organic S is the main form of S in the Ap Horizon. Amounts of organic S in southern soils ranged from 20 to 176 mg S kg$^{-1}$ of soil (Table