THE early results of the experiments reported in this paper indicate that cotton grown in rotation with peanuts requires a different fertilizer practice than when grown continuously or in rotation with other crops (9).

Cotton in rotation with peanuts frequently shows severe potash deficiency symptoms. One ton of peanuts and 1 ton of hay remove approximately 20 and 40 pounds of K₂O, respectively, a total of 60 pounds. One and one-half bales of cotton will remove approximately 5 pounds of K₂O in the lint and 15 pounds in the seed. With these yields, approximately 80 pounds of K₂O must be applied during the rotation to replace the potash actually removed in these crops. This explains in part the necessity for making larger applications of potash to cotton that is grown in rotation with peanuts.

The necessity for making larger applications of potash to cotton following peanuts has been studied in Alabama (1). After two crops of harvested peanuts in a 7-year period, fertilizers containing 24 pounds of K₂O produced 652 pounds of seed cotton. Tripling the amount of potash in the fertilizer applied increased the yield to 1,075 pounds. Continuous cotton and cotton grown in rotation with corn produced 1,269 and 1,201 pounds per acre of seed cotton, respectively, when the fertilizer applied contained 24 pounds of K₂O. In North Carolina (7) cotton required at least 60 pounds of K₂O for maximum yields when grown in a cotton-peanut rotation.

The value of neutralizing cotton fertilizers with dolomitic limestone has been demonstrated (3, 5, 8, 10). The effects of lime applied to peanuts for meeting the calcium and magnesium requirements of cotton have not been studied specifically.

The experiments reported in this paper were initiated to study further the potash and lime requirements of cotton when grown in rotation with peanuts.

PROCEDURE

Experiments were initiated in North Carolina in 1938 on soil types selected as typical of those in the cotton-peanut belt in the northern section of the Coastal Plain. The soil types, their approximate location, and general drainage conditions are shown in Table 1.

The rotation was cotton, peanuts, and corn-soybeans. Each field consisted of three blocks, with 72 1/50-acre plots each, one block for each crop each year. A split plot technique was used. Each block was divided into 6 sub-blocks of 12 1/50 acre each and the sub-blocks in turn consisted of 12 1/50-acre single plots. When...