

Yields of peanuts are shown in Table 19. Continuous peanuts harvested and followed by lupine for green manure made about the same average yield as continuous peanuts hogged-off for the five-year period.

CHEMICAL STUDIES OF SOILS AND PLANTS

Plots were selected from the rotation, fertility and lime experiments for chemical study. The object was to compare the concentration of some of the important nutrients in soil and plants and to correlate these findings with crop yield. The treatments used are shown in Tables 20 and 21. All the rotation plots sampled were planted in peanuts in 1949 and corn in 1950. The continuous peanut plots were sampled in 1949 and the continuous corn plots in 1950.

Plant and soil analyses data (3) appear in Tables 20 and 21. Soils were extracted with ammonium acetate buffered at pH 4.7. Potassium, calcium and magnesium were determined by the flame photometer and phosphorus colorimetrically. Plant material was ashed and then analyzed in the same manner.

Peanut Plots.—Soils of duplicate peanut plots were sampled nine times at two-week intervals beginning May 5, 1949, and ending September 1, 1949. The average of the eighteen samples was used. Plant samples were taken on August 12 and September 12 from duplicate plots and the average of four samples was used.

Chemical analyses of soil and plants from the peanut plots and yield of peanuts for 1949 are given in Table 20. Increasing the rate of phosphate and of potash increased the phosphorus and potassium contents of the soil and peanut plants, but did not increase the yield of peanuts. When the rate of dolomitic lime was increased, phosphorus, calcium and magnesium contents of the soil and phosphorus and magnesium contents of the peanut plants were increased, but yield was not affected.

Potassium and calcium contents of soil and plants and yield of peanuts were lower where peanuts were grown continuously than where peanuts were grown every other year in a rotation. Potassium, calcium, and magnesium contents of the soil and potassium content of the plants were lower where peanuts were grown every other year than where peanuts were grown every third year in a rotation. Results indicate that continuous peanuts more rapidly deplete the soil of potassium, calcium and magnesium than do the rotations.