phosphorus and magnesium contents of the peanut plants were increased, but yield was not affected.

Potassium and calcium contents of the soil and plants and yield of peanuts were lower where peanuts were grown continuously than where peanuts were grown every second 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 second year than where peanuts were grown every third year in rotation. Results indicate that the levels of potassium, calcium and magnesium in the soil and plant are indirectly correlated with the number of times peanuts are grown in a given period.

Surface soil samples were taken from 2 replicates of the treatments listed in Table 29 on March 28, May 18, June 26, July 13 and August 31, 1950, for chemical analyses. Plant samples were taken from 2 replicates of the same treatments May 18, June 26, July 13 and August 31. Since the data for time of sampling were not significant, replications and dates were averaged. Hence, the figure in Table 29 represent 10 samples for the soils data and 8 for the plant data.

As the rate of phosphate was increased, phosphorus and calcium contents of soil and corn plants and yield of corn increased. When the rate of potash was increased, potassium contents of soil and plants and yield of corn increased. As the potassium content of corn plants increased, calcium content decreased. When the rate of dolomitic lime was increased, phosphorus, calcium and magnesium content of the soil and phosphorus and magnesium content of corn plants and yield of corn increased.

Calcium and magnesium content of soil and plants and yield of corn were lower in continuous corn than in corn in rotation. The phosphorus content of soil growing continuous corn was higher than that of soil growing corn in rotation. Phosphorus content of the plant was the reverse. This discrepancy may be correlated with the method of determing available phosphorus. The phosphorus extracted with .002 N H_2SO_4 is primarily inorganic phosphorus. In the continuous corn plots the phosphorus was probably in the inorganic form, but in the rotation plots where cover crops had been grown over winter it is possible that considerable phosphorus was still in the organic form during sampling time and this phosphorus was available to the plants even though not extractable by the reagent used.