

LIME EXPERIMENT

The lime experiment consisted of 4 treatments arranged in randomized block design with 4 replications on a 3-year rotation. Rates of applications were 0, 2,000, 4,000, and 6,000 pounds of dolomitic lime per acre, applied in 1947, reapplied as dolomite in 1954 and reapplied as calcic lime in 1957. The 3-year rotation used was as follows: Peanuts, lupine under, corn, oats for grain, soybeans under, oats under. The experiment was laid out in triplicate, similar to the fertility experiment, so that all crops received the treatments every year.

At planting time corn and oats for grain received 500 pounds per acre of 2-10-8 fertilizer. For the first 5 years corn was top-dressed with 32 pounds of nitrogen from Uramon and oats with 32 pounds from nitrate of soda. Corn for the last 6 years and oats for grain for the last 5 years were top-dressed with 32 pounds per acre of nitrogen from ammonium nitrate. Oats turned under received annual applications of 500 pounds of 2-10-8 per acre. Peanuts were fertilized with 400 pounds of 2-10-4 per acre the first 3 years and 500 pounds per acre of 2-10-8 fertilizer the last 8 years. Blue lupine, *Crotalaria spectabilis* and soybeans received annually 300 pounds per acre of 0-14-10 fertilizer.

Yields of corn with various rates of lime are shown in Table 13. Lime at 2,000 pounds per acre gave a 3-bushel per acre average increase in yield of corn over no lime. Higher rates gave only 1 bushel additional. The response to lime increased after the second application of lime in 1954, which suggested that the soil calcium had decreased to a point where it limited corn yields or that previous applications were too low. These results indicate that lime is probably needed for optimum corn growth on Norfolk loamy fine sand.

Peanut yield responses to lime are shown in Table 14. One ton of lime gave a significant increase in yield of peanuts for 3 years and a slight increase for 4 years. Peanuts were dusted with 3 or 4 20-pound applications of elemental sulfur-DDT mixture per acre each year to control leaf spot, army worms and velvet bean caterpillars. The sulfur made the soil more acid. Twenty-seven months after 1 ton of lime had been applied, the soil had reached about the same pH level as before liming (Table 15). This would indicate that lime should be applied every 3 years to maintain the initial reaction in the soil, but less frequently if no sulfur is applied.