

When 1 ton of lime was added, the potassium tended to remain in the top 6 inches of soil, with only a slight movement into the 6- to 12-inch layer of soil. As more lime was applied, there was a little more movement of potassium into the 6- to 12-inch and 12- to 18-inch layers of soil, but no movement into the 18- to 24-inch and 24- to 30-inch layers of soil.

TABLE 32.—CHEMICAL ANALYSES OF PREFERTILIZATION SOIL SAMPLES FROM LIME EXPERIMENT.

Lime* Pounds per Acre	1956					1957				
	Pounds per Acre					Pounds per Acre				
	pH	K ₂ O	Ca	Mg	Bray P ₂ O ₅	pH	K ₂ O	Ca	Mg	Bray P ₂ O ₅
0	5.4	82	150	30	450	4.8	101	137	67	550
2,000	6.2	92	410	101	560	5.5	110	290	109	570
4,000	6.3	93	580	134	490	5.9	126	370	140	560
6,000	6.6	114	770	188	460	6.2	130	480	221	520

* Received the indicated rates of dolomitic lime in 1947 and again in 1954. An additional application of high calcic lime was made in 1957 after sampling.

There was only a slight movement of phosphorus into the 6- to 12-inch layer of soil and no movement below that depth.

These results indicated that there was only a small loss of calcium and potassium, a large loss of magnesium and no loss of phosphorus from the surface soil.

The organic matter of the soil as determined by the Walkley Method (11) for the first, fifth and tenth years of the rotation experiment are shown in Table 34. The loss of the first 4 years on plot and rotation basis is compared with that for the last 6 years. For the first 4 years the loss in organic matter was highly significant for all the plots. For the last 6 years there was a slight loss for the continuous peanut plots and a slight gain for the continuous corn plots. There was practically no change in the 2-year rotation plots, but the 3-year rotation plots gained about twice as much organic matter as the continuous corn plots. These results indicate that the 3-year rotation was the best system for maintaining the organic matter in the soil. They also showed that the poorest system of soil management was continuous peanuts with or without lupine. Since the lupine after continuous peanuts was almost a complete failure, it added practically no organic matter to the soil.

The organic matter content of soil from plots of the fertilizer experiment is shown in Table 35. For the first 4 years there was