THE CHEMICAL AND PHYSICAL BEHAVIOR OF CERTAIN SYNTHETIC FERTILIZER SALTS WHEN MIXED WITH LIMESTONE AND DOLOMITE

W. H. MacIntire and K. B. Sanders

There are obvious advantages in the use of ground limestone along with concentrated fertilizer materials such as "Nitrophoska" and similar products. The mixing of the two products facilitates uniform drilling. It also minimizes the danger to seed germination by reducing salt concentration. The joint use of the two materials also provides fresh supplies of calcium to effect neutralization of biologically engendered acids and to lessen the production of acidoids, or acid-reacting silicates, in the soil. When dolomitic limestone is used there is the additional advantage of insuring increased supplies of both calcium and magnesium for plant use. Although there seemed to be no valid reason why the materials should not be mixed immediately before incorporation in the soil, it did not follow that the mixtures could be kept for any length of time without detriment, especially in humid seasons. It was necessary to ascertain what effect storage would have upon loss of ammonia, solubility of any component, and mechanical condition.

CHEMICAL STABILITY OF LIMESTONE AND MANURE-SALTS MIXTURES

A study was made to determine the effects of limestone and dolomite upon the stability of five ammoniates, viz., ammonium sulfate, leumasalpeter, potassium-ammonium nitrate, floranid, and nitrophoska. If the limestone were to cause no appreciable evolution of ammonia, other components would be expected to suffer no material chemical change.

AIR-DRY MIXTURES

The first series was made up of air-dry materials. A 20-gram charge of each manural salt and an 80-gram charge of 100-mesh limestone were introduced into a 500-cc rubber-stoppered Ehrenmeyer flask and thoroughly mixed. The flask was provided with an intake and outlet so that the atmosphere of the flask could be aspirated for analysis. A parallel series was run with a 100-mesh dolomite that had been dried in a coal-dust flame at the producing plant. The two series were aspirated after 1-, 3-, 19-, and 36-day periods. The cumulative data for the volatilized ammonia that was...