

Introduction.

The importance to plant growth of an adequate supply of the phosphatic nutrient has long been realised and its addition to the soil in the form of fertilizers has become a world-wide agricultural practice. Tropical soils in particular have been found to be very deficient in this nutrient and its application in such regions has frequently resulted in startling increases in crop yields. Such a deficiency may result from a low total supply of phosphorus in the soil but this is rarely the case; generally it is due to the low availability of that which is present. Some soils possess the ability of rapidly converting phosphorus added as a soluble phosphate into a form unavailable to the plant and this phenomenon is known as fixation.

Much work has been carried out on the subject of fixation and a good summary of these investigations is to be found in a paper by L.E.Davies (2). Of the various theories advanced in explanation of the phenomenon the most widely accepted is that which ascribes it to the formation of insoluble iron and aluminium phosphates as a result of these metals in the soil solution under suitable conditions of acidity.

The simplest manner in which to overcome the difficulty is obviously to saturate the soil by heavy dressings of soluble phosphates and thus to satisfy its fixation demands but this method is rarely economically possible and other means have been sought. Several workers have recommended the addition of lime to such soils, thus throwing the iron and aluminium out of solution by the alteration of the soil reaction, while others have obtained considerable success by the addition of silicates which combine with

the metals and render them inactive. The use of slowly-soluble compounds, such as organic phosphates, and the localisation of fertilizers in small areas so that high concentrations of phosphate are produced are other methods which have been investigated and in many cases proved successful.

The study of phosphate fixation at this College on the local soils arose from an experiment carried out at the Cotton Station, St. Augustine, in 1936-37. As a result of this, experiments have been designed this year to test for, and possibly modify, the fixation effect.

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