

DISSOLUTION PATTERN OF ROCK PHOSPHATES

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The dissolution of four indigenous and two imported rock phosphates in an acid soil was studied for a period of 120 days. As the amount of rock phosphate applied increased, an increase in available P content was noticed. A reduction in P availability was noted during the 60 to 75 day period after the addition of P in the form of rock phosphates. The highest P availability was from Cafsaphos among the rock phosphates studied. All indigenous P sources in general showed similar dissolution pattern.

Key words : Acidic soil, Dissolution, Rock phosphate, Soil analysis.

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INTRODUCTION

Phosphorus (P) is an essential macro nutrient for crops and performs many important physiological functions in plants. Hence its management in soil deserves special attention. Three soil factors (i) amount of total P present (ii) available P and (iii) P-fixing capacity determine specific P management. In acid soils when water soluble P fertiliser is added, P is readily converted to insoluble forms and suffers reduction in availability. Hence direct use of insoluble rock phosphate with or without small quantities of soluble P is often advantageous (Kanwar and Grewal, 1958).

Rock phosphates (RP) are composed principally of calcium phosphates (apatites). A slow but steady availability of plant utilizable P is the most important characteristic of any reactive variety of rock phosphate (Chien *et al.*, 1987 b). Growing popularity of ground rock phosphates in

plantation crops arises from sound agronomic considerations.

The agronomic efficiency of rock phosphates varies with its mineralogical characteristics and the effectiveness depends on crystallochemical structure of the apatite as well as substitution of $(\text{PO}_4)^{3-}$ by F and $(\text{CO}_3)^{2-}$ in them (Chien and McClellan, 1977). Other factors are the particle size of rock phosphates, soil characteristics, crop, agro-climatic features and mode of application.

A number of indigenous and imported rock phosphates are available in the market and are under use in rubber plantations, but very little is known about their performance in rubber growing soils. P dissolution of rock phosphates in soil is a widely accepted index of P availability. This study was undertaken to examine the dissolution pattern of rock phosphates, upon incubation in an acid soil from a rubber growing tract.