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PHOSPHORUS STATUS OF *HEVEA* GROWING SOILS OF NIGERIA

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The phosphorus status of soils of the three major rubber growing zones of Nigeria (western, eastern and central) were evaluated. Available phosphorus was extracted by the methods of Bray and Kurtz No. 1, Bray and Krutz No.2 and Olsen. The various forms of P were also determined. Total soil P ranged from 58.0 to 337.3 ppm with active P constituting between 13 and 33 per cent. Organic P ranged from 29 to 88 ppm while the standard P requirement of the soils ranged from 6 to 120 ppm. The relative abundance of the various inorganic P forms was in the order of inactive P>Fe-P>Al-P> Ca P.

Total and organic forms of P correlated negatively with clay and positively with sand. Available P extracted by the three methods correlated with Fe-P, Al-P and Ca-P. The higher correlation coefficient with Al-P and Fe-P shows that they contribute more to soil available P in these soils.

Key words: *Hevea brasiliensis*, Soil analysis, Total phosphorus, Phosphorus fractions, Phosphorus sorption, Nigeria.

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INTRODUCTION

More than 85 per cent of the soils supporting *Hevea* in Nigeria belong to the acid sands, which are inherently deficient in P due to the high fixation of applied P by hydrous oxides of Fe and Al (Udo and Uzu, 1972; Osodeke *et al.*, 1991) and low availability of native P (Udo and Ogunwale, 1977). Application of P in these soils increased the height and girth of rubber seedlings and the latex yield of mature rubber when applied in combination with nitrogen and potassium (Onuwaje, 1983). The P sorption of these soils has been studied by Osodeke *et al.* (1991) but no detailed study on the forms of P in these soils has been taken up. Information of total P, various fractions of P and their availability to crops provided through this paper will therefore complement the study on sorption characteristics and will serve as a guide to P requirement of *Hevea* on these soils.

MATERIALS AND METHODS

Fifty two samples representative of the *Hevea* growing soils of Nigeria collected from Iyanomo, Okhuo, Sapele and Urhonigbe in the central zone; Akwete, Odagwa and Calabar in the eastern zone and Igbotako and Ikenne in the western zone were used for this study. The samples were collected from 0-15 cm and 15-45 cm depth. From Akwete and Ikenne two sets of surface samples (0-15 cm) were collected.